# MODEL SUPER P

**UNIT SERIAL NUMBER _____**

**MANUAL NUMBER: 301321-F**

**EFFECTIVE 01/2015**

Highway Equipment Company

*Building the best since 1939.*

**1330 76TH AVE SW**
**CEDAR RAPIDS, IA 52404-7052**
**PHONE (319) 363-8281 | FAX (319) 286-3350**
***www.highwayequipment.com***

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# Insert Current Hi-Way Warranty

PLEASE ! ALWAYS THINK SAFETY FIRST !!

The purpose of this manual is to familiarize the person (or persons) using this unit with the information necessary to properly install, operate, and maintain this system. The safety instructions indicated by the safety alert symbol in the following pages supersede the general safety rules. These instructions cannot replace the following: the fundamental knowledge that must be possessed by the installer or operator, the knowledge of a qualified person, or the clear thinking necessary to install and operate this equipment. Since the life of any machine depends largely upon the care it is given, we suggest that this manual be read thoroughly and referred to frequently. If for any reason you do not understand the instructions, please call your authorized dealer or our Product Sales and Support Department at 1-888-363-8006.

It has been our experience that by following these installation instructions, and by observing the operation of the spreader, you will have sufficient understanding of the machine enabling you to troubleshoot and correct all normal problems that you may encounter. Again, we urge you to call your authorized dealer or our Product Sales and Support Department if you find the unit is not operating properly, or if you are having trouble with repairs, installation, or removal of this unit.

We urge you to protect your investment by using genuine HECO parts and our authorized dealers for all work other than routine care and adjustments.

Highway Equipment Company reserves the right to make alterations or modifications to this equipment at any time. The manufacturer shall not be obligated to make such changes to machines already in the field.

This Safety Section should be read thoroughly and referred to frequently.

ACCIDENTS HURT !!!

ACCIDENTS COST !!!

ACCIDENTS CAN BE AVOIDED !!!

# SAFETY

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THAT OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

In this manual and on the safety signs placed on the unit, the words “DANGER,” “WARNING,” “CAUTION,” and “NOTICE” are used to indicate the following:

| | |
|---|---|
| **DANGER** | Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury. This signal word is to be limited to the most extreme situations and typically for machine components that, for functional purposes, cannot be guarded. |
| **WARNING** | Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices. |
| **CAUTION** | Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices. |
| **NOTICE!** | Is used for informational purposes in areas which may involve damage or deterioration to equipment but generally would not involve the potential for personal injury. |
| **NOTE:** | Provides additional information to simplify a procedure or clarify a process. |

The need for safety cannot be stressed strongly enough in this manual. At Highway Equipment Company, we urge you to make safety your top priority when operating any equipment. We firmly advise that anyone allowed to operate this machine be thoroughly trained and tested, to prove they understand the fundamentals of safe operation.

The following guidelines are intended to cover general usage and to assist you in avoiding accidents. There will be times when you will run into situations that are not covered in this section. At those times the best standard to use is common sense. If, at any time, you have a question concerning these guidelines, please call your authorized dealer or our factory at (319) 363-8281.

**MAINTENANCE INSTRUCTIONS**

1. Keep safety decals and signs clean and legible at all times.

2. Replace safety decals and signs that are missing or have become illegible.

3. Replaced parts that displayed a safety sign should also display the current sign.

4. Safety decals or signs are available from your dealer's Parts Department or our Cedar Rapids factory.

**INSTALLATION INSTRUCTIONS**

1. Clean Surface
   Wash the installation surface with a synthetic, free-rinsing detergent. Avoid washing the surface with a soap containing creams or lotion. Allow to dry.

2. Position Safety Decal
   Decide on the exact position before application. Application marks may be made on the top or side edge of the substrate with a lead pencil, marking pen, or small pieces of masking tape. NOTE: Do not use chalk line, china marker, or grease pencil. Safety decals will not adhere to these.

3. Remove the Liner
   A small bend at the corner or edge will cause the liner to separate from the decal. Pull the liner away in a continuous motion at a 180-degree angle. If the liner is scored, bend at score and remove.

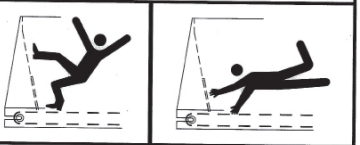
4. Apply Safety Decal
   a. Tack decal in place with thumb pressure in upper corners.
   b. Using firm initial squeegee pressure, begin at the center of the decal and work outward in all directions with overlapping strokes. NOTE: Keep squeegee blade even—nicked edges will leave application bubbles.
   c. Pull up tack points before squeegeeing over them to avoid wrinkles.

5. Remove Pre-mask
   If safety decal has a pre-mask cover remove it at this time by pulling it away from the decal at a 180 degree angle. NOTE: It is important that the pre-mask covering is removed before the decal is exposed to sunlight to avoid the pre-mask from permanently adhering to the decal.

6. Remove Air Pockets
   Inspect the decal in the flat areas for bubbles. To eliminate the bubbles, puncture the decal at one end of the bubble with a pin (never a razor blade) and press out entrapped air with thumb moving toward the puncture.

7. Re-Squeegee All Edges.

DANGER



MOVING PART HAZARD
To prevent death or serious injury:
- Stay out of box while conveyor is moving.
- Disconnect and lockout power source before adjusting or servicing.
- Do not ride on spreader.

364–C

DANGER

GUARD IS MISSING
WHEN THIS IS VISIBLE
To prevent death or serious injury:
- Do not operate without guards in place.
- Disconnect and lockout power source before adjusting or servicing.
- Keep hands, feet and hair away from moving parts.

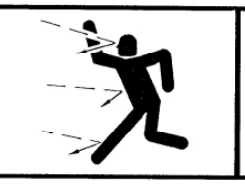
55224–B

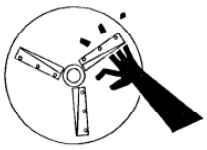
DANGER

EXPLOSION HAZARD
To prevent death or serious injury:
- Do not smoke while refueling.
- Keep smoking material, sparks and open flames away.

363–C

DANGER

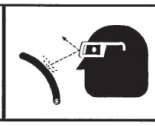




FLYING MATERIAL & ROTATING SPINNER HAZARD
To prevent death or serious injury:
- Wear eye protection.
- Stop machine before servicing or adjusting.
- Keep bystanders at least 60 feet away.

83649–B

WARNING



HIGH PRESSURE FLUID HAZARD
To prevent death or serious injury:
- Relieve pressure on system before repairing, adjusting, or disconnecting.
- Keep all lines, fittings and couplers tight and free of leaks.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Do not use hydraulic lines for hand holds or steps.
- Components may be hot.

39138–C

WARNING

FALLING HAZARD
To prevent death, serious injury or machine damage:
- Do not stand or climb on guard.

55630–D

WARNING

MOVING PART HAZARD
To prevent death or serious injury:
- Close and secure guards before starting.
- Do not stand or climb on machine.
- Disconnect and lockout power source before adjusting or servicing.
- Keep hands, feet and hair away from moving parts.

55631–C

WARNING

MOVING PART HAZARD
To prevent death or serious injury:
- Close and secure guards before starting.
- Do not stand or climb on machine.
- Disconnect and lockout power source before adjusting or servicing.
- Keep hands, feet and hair away from moving parts.

79692–D

NOTICE

- Use SAE 15W–40 for hydraulic fluid.
- Extreme operating temperatures may require a different viscosity oil range.
- Consult dealer for recommendation.

8665–D

NOTICE

Keep valve open while pump is running.

8664–D

NOTICE

Change filter element.

After the first 50 hrs. and every 250 hrs. Thereafter

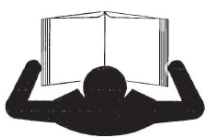
39378–F

CAUTION

HAZARDOUS MATERIALS
To avoid injury or machine damage:
- Materials to be spread can be dangerous.
- Improper selection, application, use or handling may be a hazard to persons, animals, crops or other property.
- Follow instructions and precautions given by the material manufacturer.

321–C

CAUTION



TO AVOID INJURY OR MACHINE DAMAGE:
- Do not operate or work on this machine without reading and understanding the operators manual.
- Keep hands, feet, hair and clothing away from moving parts.
- Do not allow riders on machine.
- Avoid unsafe operation or maintenance.
- Disengage power takeoff and shut off engine before removing guards, servicing or unclogging machine.
- Keep unauthorized people away from machine.
- Keep all guards in place when machine is in use.
- If manual is missing, contact dealer for replacement.

150034–C

## GENERAL SAFETY RULES
## OPERATION SECTION



1. Before attempting to operate this unit, read and be sure you understand the operation and maintenance manual. Locate all controls and determine the use of each. Know what you are doing!

2. When leaving the unit unattended for any reason, be sure to:
   a. Take power take-off out of gear.
   b. Shut off conveyor and spinner drives.
   c. Shut off vehicle engine and unit engine (if so equipped).
   d. Place transmission of the vehicle in “neutral” or “park”.
   e. Set parking brake firmly.
   f. Lock ignition and take keys with you.
   g. Lock vehicle cab.
   h. If on steep grade, block wheels.

   These actions are recommended to avoid unauthorized use, runaway, vandalism, theft and unexpected operation during start-up.

3. Do not read, eat, talk on a mobile phone or take your attention away while operating the unit. Operating is a full-time job.

4. Stay out of the spreader. If it’s necessary to enter the spreader, return to the shop, empty body, turn off all power, set vehicle brakes, lock engine starting switch and remove keys before entering. Tag all controls to prohibit operation. Tags should be placed, and later removed, only by person working in the body.

5. Guards and covers are provided to help avoid injury. Stop all machinery before removing them. Replace guards and covers before starting spreader operation.

6. Stay clear of any moving members, such as shafts, couplings and universal joints. Make adjustments in small steps, shutting down all motions for each adjustment.

7. Before starting unit, be sure everyone is clear and out of the way.

8. Do not climb on unit. Use the inspection ladder or a portable ladder to view the unit. Be careful in getting on and off the ladder, especially in wet, icy, snowy or muddy conditions. Clean mud, snow or ice from steps and footwear.

9. Do not allow anyone to ride on any part of unit for any reason.

10. Keep away from spinners while they are turning:
    a. Serious injury can occur if spinners touch you.
    b. Rocks, scrap metal or other material can be thrown off the spinner violently. Stay out of discharge area.

    c. Make sure discharge area is clear before spreading.

11. Inspect spinner fins, spinner frame mounting and spinner fin nuts and screws every day. Look for missing fasteners, looseness, wear and cracks. Replace immediately if required. Use only new SAE grade 5 or grade 8 screws and new self-locking nuts.

12. Inspect all bolts, screws, fasteners, keys, chain drives, body mountings and other attachments periodically. Replace any missing or damaged parts with proper specification items. Tighten all bolts, nuts and screws to specified torques according to the torque chart in this manual.

13. Shut off engine before filling fuel and oil tanks. Do not allow overflow. Wipe up all spills. Do not smoke. Stay away from open flame. FIRE HAZARD!

14. Starting fluids and sprays are extremely flammable. Don't smoke. Stay away from flame or heat!

15. All vehicles should be equipped with a serviceable fire extinguisher of 5 BC rating or larger.

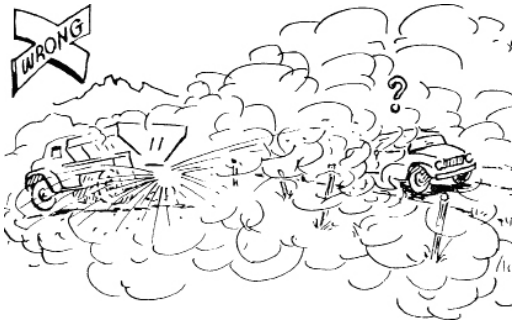
16. Hydraulic system and oil can get hot enough to cause burns. DO NOT work on system that is hot. Wait until oil has cooled. If an accident occurs, seek immediate medical assistance.

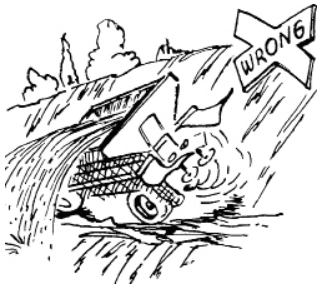
17. Wear eye protection while working around or on unit.

18. Read, understand and follow instructions and precautions given by the manufacturer or supplier of materials to be spread. Improper selection, application, use or handling may be hazardous to people, animals, plants, crops or other property.

**CAUTION** If spreader is used to transport chemicals, check with your chemical supplier regarding DOT (Department of Transportation) requirements.

19. Cover all loads that can spill or blow away. Do not spread dusty materials where dust may create pollution or a traffic visibility problem.




20. Turn slowly and be careful when traveling on rough surfaces and side slopes, especially with a loaded spreader. Load may shift causing unit to tip.

21. Read and understand the precautionary decals on the spreader. Replace any that become defaced, damaged, lost or painted over. Replacement decals can be ordered from your dealer's parts department or from Highway Equipment Company by calling (319) 363-8281.

1. Maintenance includes all lubrication, inspection, adjustments (other than operational control adjustments such as feedgate openings, conveyor speed, etc.) part replacement, repairs and such upkeep tasks as cleaning and painting.

2. When performing any maintenance work, wear proper protective equipment—always wear eye protection—safety shoes can help save your toes—gloves will help protect your hands against cuts, bruises, abrasions and from minor burns—a hard hat is better than a sore head!

3. Use proper tools for the job required. Use of improper tools (such as a screwdriver instead of a pry bar, a pair of pliers instead of a wrench, a wrench instead of a hammer) not only can damage the equipment being worked on, but can lead to serious injuries. USE THE PROPER TOOLS.

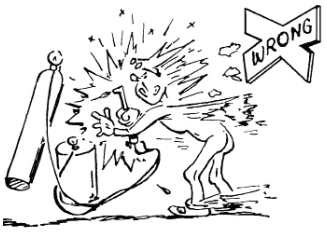
4. Before attempting any maintenance work (including lubrication), shut off power completely. DO NOT WORK ON RUNNING MACHINERY!

5. When guards and covers are removed for any maintenance, be sure that such guards are reinstalled before unit is put back into operation.

6. Check all screws, bolts and nuts for proper torques before placing equipment back in service. Refer to torque chart in this manual.

7. Some parts and assemblies are quite heavy. Before attempting to unfasten any heavy part or assembly, arrange to support it by means of a hoist, by blocking or by use of an adequate arrangement to prevent it from falling, tipping, swinging or moving in any manner which may damage it or injure someone. Always use lifting device that is properly rated to lift the equipment. Do not lift loaded spreader. NEVER LIFT EQUIPMENT OVER PEOPLE.

8. If repairs require use of a torch or electric welder, be sure that all flammable and combustible materials are removed. Fuel or oil reservoirs must be emptied, steam cleaned and filled with water before attempting to cut or weld them. DO NOT weld or flame cut on any tank containing oil, gasoline or their fumes or other flammable material, or any container whose contents or previous contents are unknown.




9. Keep a fully charged fire extinguisher readily available at all times. It should be a Type ABC or a Type BC unit.

10. Cleaning solvents should be used with care. Petroleum based solvents are flammable and present a fire hazard. Don't use gasoline. All solvents must be used with adequate ventilation, as their vapors should not be inhaled.

11. When batteries are being charged or discharged, they generate hydrogen and oxygen gases. This combination of gases is highly explosive. DO NOT SMOKE around batteries—STAY AWAY FROM FLAME—don't check batteries by shorting terminals as the spark could cause an explosion. Connect and disconnect battery charger leads only when charger is "off". Be very careful with "jumper" cables.

12. Batteries contain strong sulfuric acid—handle with care. If acid gets on you, flush it off with large amounts of water. If it gets in your eyes, flush it out with plenty of water immediately and get medical help.

13. Hydraulic fluid under high pressure leaking from a pin hole are dangerous as they can penetrate the skin as though injected with a hypodermic needle. Such liquids have a poisonous effect and can cause serious wounds. To avoid hazard, relieve pressure before disconnecting hydraulic lines or performing work on system. Any fluid injected into the skin must be treated within a few hours or gangrene may result. Get medical assistance immediately if such a wound occurs. To check for such leaks, use a piece of cardboard or wood instead of your hand. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

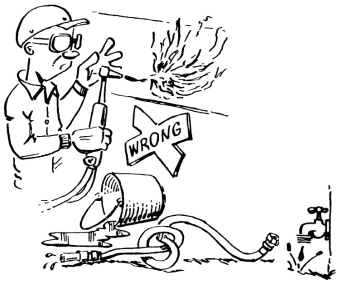
14. The fine spray from a small hydraulic oil leak can be highly explosive—DO NOT SMOKE—STAY AWAY FROM FLAME OR SPARKS.

1. The selection of the vehicle on which a spreader body is to be mounted has important safety aspects. To avoid overloading:
   a. Do not mount spreader on a chassis which, when fully loaded with material to be spread, will exceed either the Gross Axle Weight Rating (GAWR) or the Gross Vehicle Weight Rating (GVWR) for the chassis.
   b. Do install the spreader only on a vehicle with cab-to-axle dimension recommended for the spreader body length shown.

2. Follow mounting instructions in the Installation section of this manual. If mounting conditions require deviation from these instructions refer to factory.

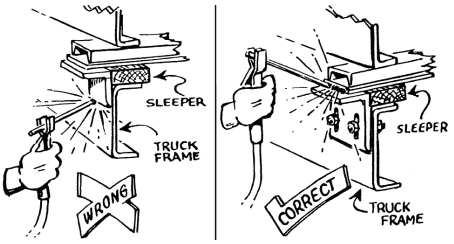
3. When making the installation, be sure that the lighting meets Federal Motor Vehicle Safety Standard (FMVSS) No. 108, ASABE S279 and all applicable local and state regulations.

4. When selecting a PTO to drive hydraulic pump, do not use a higher percent speed drive than indicated in the Installation section of this manual. Too high a percent PTO will drive pump at excessive speed, which can ruin the pump, but more importantly, will overheat the hydraulic oil system and increase the possibility of fire.

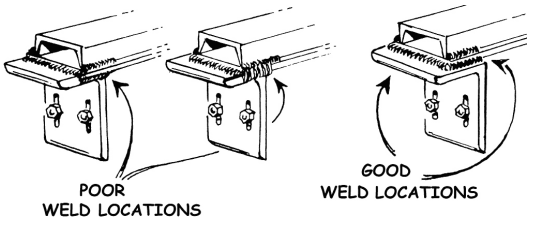



5. When truck frame must be shortened, cut off only the portion that extends behind rear shackle in accordance with the truck manufacturer's recommendations. If a torch is used to make the cut, all necessary precautions should be taken to prevent fire. Cuts should not be made near fuel tanks and hydraulic oil reservoirs, fuel, brake, electric or hydraulic lines and such lines should be protected from flame, sparks or molten metal. Tires should be removed if there is any chance of their being struck by flame, sparks or molten metal. Have a fire extinguisher handy.

6. Do not weld on vehicle frame as such welding can lead to fatigue cracking and must be avoided. When drilling holes in frame member, drill only through the vertical web portions do not put holes in top or bottom flanges. Refer to truck manufacturer's recommendations.




7. Be sure that welds between mounting bars and sill or between mounting angles and spreader cross sills are sound, full fillet welds. Center mounting angles so that good fillet welds can be made on three sides—and edge bead weld is not a satisfactory weld for this service. Use 309 rod/wire for carbon steel and 409 steel. On 304 stainless steel bodies use SAE grade 5 bolts—welding is recommended if type 308 welding rod is available.




8. Install controls so that they are located of convenient use. Position them so that they do not interfere with any vehicle control and that they do not interfere with driver or passenger or with access to or exit from the vehicle.

9. Check for vehicle visibility, especially toward the rear. Reposition or add mirrors so that adequate rearward visibility is maintained.

10. Add Caution, Warning, Danger and Instruction decals as required. Peel off any label masking which has not been removed.

11. Install all guards as required.

12. Check installation completely to be sure all fasteners are secure and that nothing has been left undone.

SAFETY

**Refer to www.highwayequipment.com for installation instructions.**
**Once on the website:**

- **Click Hi-Way**
- **Select: Customer Support**
- **Select: Other Hi-Way Manuals and Instructions**
- **Select: V-Body Spreader Installation Instructions.**

The Super P and Super P-HC are hopper-type spreaders and in many respects smaller versions of the Hi-Way Model E2020XT. They are intended for spreading abrasives and de-icing products for the control of snow or ice. The units can be mounted into a pick-up truck.

The Super P and Super P-HC are both offered with two different drive options, standard gas engine drive or optional hydraulic drive. Both spreaders are offered with two conveyor options, standard #1 bar chain conveyor, or optional Belt-Over-Chain (BOC) conveyor.

Options:

- The engine options are a 10.5 HP Briggs & Stratton (Super P ONLY) or 11 HP Honda (Super P or Super P-HC) four-cycle gasoline engine mounted at the rear. The engine drives a 20:1 worm gear case. The spinner is driven from the input shaft of the worm gear and the conveyor is driven from the output shaft. Variable speed control is obtained by the use of an electric throttle.
- The hydraulic options are single motor, dual motor or direct drive. The spinner is driven from the input shaft of a 20:1 worm gear case or directly driven by a hydraulic motor. The conveyor is driven from the output shaft of the worm gear or a hydraulic motor. Spinner and conveyor speed are adjusted by means of control valves.

The Super P with standard gas engine drive and #1 bar chain conveyor is designed to spread straight sand or a salt/sand mixture only. When applying straight salt, a BOC conveyor is required.

The Super P with optional dual hydraulic drive and #1 bar chain conveyor is designed to spread straight sand, a salt/sand mixture, or straight salt.
**NOTE:** When applying straight salt, a minimum feedgate height of 2” must be maintained.

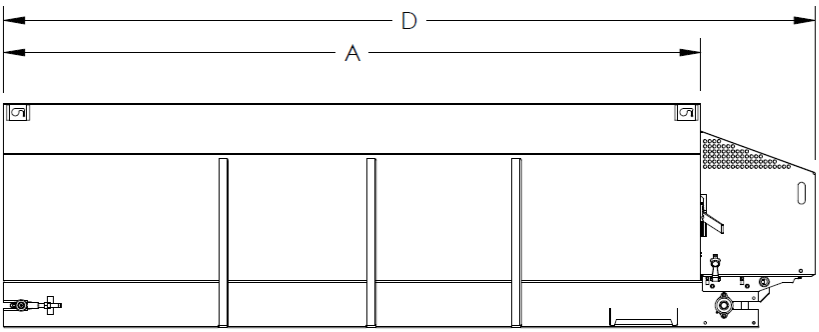
**NOTE:** As a general operating rule, for all spreaders, it is recommended to always use the highest feedgate setting and slowest conveyor speed to achieve desired application rate. Following this simple rule will reduce pressure and duty cycles on the conveyor and conveyor drive components, resulting in maximum service life.

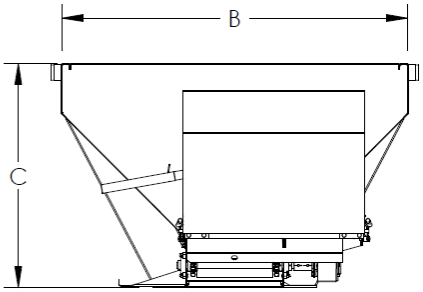
Also, using poor quality material (material with particles sizes ranging from fine to coarse) will cause an increased load on the conveyor and conveyor drive system. If poor quality material must be used, a BOC conveyor is recommended.

The conveyor runs the full length of the hopper bottom to deliver material through an adjustable feedgate to the spinner.

The spinner hopper has two internal baffles and three external baffles for adjusting the spread to the desired pattern.

This product is intended for commercial use only.




| A | B | C | D | | |
|---|---|---|---|---|---|
| UNIT LENGTH Feet (cm) | INSIDE BODY WIDTH Inches (cm) | HEIGHT Inches (cm) | OVERALL LENGTH Inches (cm) | WEIGHT (EMPTY) Pounds (kg) | CAPACITY - STRUCK cu. yd. (cu. m.) |
| 7 (213.4) | 59.5 (151.5) | 39 (99) | 103.6 (263) | 795 (362) | 2.4 (1.8) |
| 8 (243.8) | 59.5 (151.5) | 39 (99) | 115.6 (294) | 895 (406) | 2.7 (2.1) |
| 9 (274.3) | 59.5 (151.5) | 39 (99) | 127.6 (324) | 995 (451) | 3.0 (2.3) |
| 9 (274.3) | 80.0 (203.7) | 43 (109) | 127.6 (324) | 1105 (501) | 4.0 (3.1) |
| 10 (304.8) | 59.5 (151.5) | 39 (99) | 139.6 (355) | 1095 (497) | 3.3 (2.5) |
| 10 (304.8) | 80.0 (203.7) | 43 (109) | 139.6 (355) | 1205 (547) | 4.4 (3.4) |

Check over entire unit to be sure all fasteners are in place and properly tightened per *Torque Chart* in this manual.

Prior to testing the unit, check the position of the On-Off control in the cab. It should be in the Off position. Do not load the hopper.

1. Check to be sure that no loose parts or other material is in the hopper body, spinner hopper or on the spinner disc.
2. Raise the feedgate until it is completely clear of the conveyor.

**FOR AUXILIARY ENGINE DRIVEN UNITS**

3. Check the oil level in the auxiliary engine crankcase. Add oil if necessary. See *Lubricant Specifications* later in this manual or the engine manufacturer's manual.
4. Be sure all bearings, shafts and gear case are properly lubricated.
5. Check for proper alignment between conveyor and spinner sprockets and between engine and conveyor sprockets. Then make sure sprocket set screws are properly tightened.

Check to see if chain tension is correct. Use a straight edge to check. Chain movement at center of one side of the chain should be 5/16" (8mm). (Figure 1) Chain tension is adjusted by loosening the engine mounting bolts and moving the engine on its base. Tighten the mounting screws to maintain adjustment.

A loose drive chain will cause shock loads, resulting in damage or failure of related components. Over-tightening of drive chain causes excessive wear and heat, greatly reducing chain and sprocket life and may cause damage to other components of the drive system.

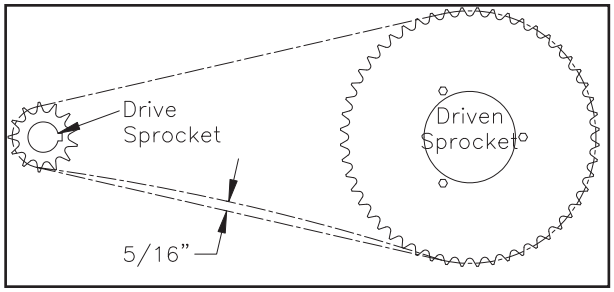



**Figure 1 - Adjusting Chain Tension**

**WARNING** Stay clear of moving machinery.

6. Start auxiliary engine and allow it to warm up at idle speed. Actuate electric clutch switch if so equipped.
7. Bring auxiliary engine up to speed. Conveyor and spinner should operate smoothly at normal operating speeds.

**DANGER** Stay clear of the spinner when it is operating. Contact with a moving spinner can cause serious injury.

**WARNING** Shut down engine before servicing unit. When making adjustments to the engine that requires it to be running, remove the drive chain before performing the service.

**For Hydraulic Driven Units**

1. Fill the hydraulic reservoir with oil. Refer to *Lubricant Specifications* section later in this manual for the proper oil. Open gate valve fully (rotate counterclockwise to open).
2. Be sure all bearings, shafts and gear case are properly lubricated.
3. Check for proper alignment between spinner sprockets. Then check to be sure sprocket set screws are tightened sufficiently.
4. Start engine. Engage PTO or actuate electric clutch switch (if applicable). Let engine run at about 1000 RPM for a few minutes, allowing oil to circulate through the pump and back to the reservoir. In cold weather allow greater warm-up time.

| | | |
|---|---|---|
| | **DANGER** | Stay clear of spinner when it is operating. Contact with a moving spinner can cause severe injury. |

5. Move hydraulic control valve to position 3. Conveyor and spinner should run at low speed. Allow to run until they operate smoothly to indicate air has been purged from the system.

| | | |
|---|---|---|
| | **DANGER** | Do not check leaks with hands while system is operating as high pressure leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated. Relieve pressure before disconnecting hydraulic lines or working with system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. |

| | | |
|---|---|---|
| | **WARNING** | DO NOT check for hydraulic leaks adjacent to moving parts while system is operating as there may be danger of entanglement! |

6. Bring engine speed up (about 3000 RPM) and move hydraulic control valve to position 5. Run a few minutes to be sure unit runs smoothly. Shut down the system. When all parts have come to rest, check all hydraulic system connections for leaks.
7. Check hydraulic oil level. Add oil as necessary. When you remove the fill cap, oil should be visible in the bottom of the strainer basket. Unit is now ready for road testing.

**CAUTION** Be sure all fasteners are tight to avoid spreader coming loose.

**CAUTION** Be careful where you spread materials. Avoid operating near or around personnel.

Before taking the unit out to use, make a walk-around inspection to assure that the spreader is not damaged, that all essential parts are in place, and that all fasteners are tight and all guards are in place. Check all controls to be sure they are operating satisfactorily.

**CHAIN TENSION**

Check both the drive chain to the spinner and the main drive chain for proper tension. See Step #5 "For Auxiliary Engine Driven Units" under Initial Start-Up to adjust chain tension and "Drive Chains" under *Lubrication and Maintenance* for lubrication instructions. Adjust and lubricate both drive chains accordingly.

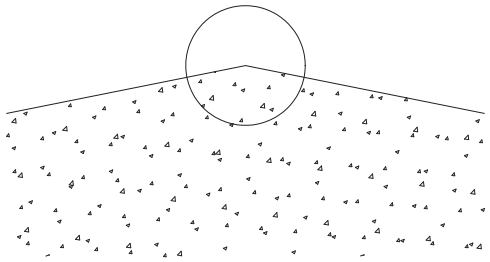
**SPREAD PATTERN ADJUSTMENT**

Fill the body with material and start the engine. Before spreading some preliminary adjustments are necessary to give an even spread pattern.

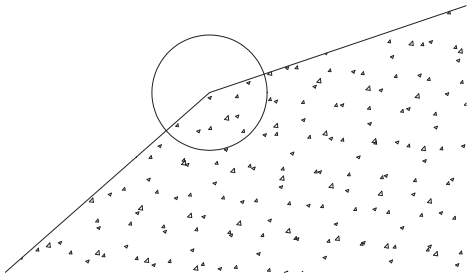
The spread pattern is adjusted by using the internal and external baffles. The adjustment of these baffles depends on the pattern desired.

First, decide what type of pattern you desire. Do you want the pattern to be to the right, to the left, or centered? Do you want a full pattern or a confined one? Do you have to protect people and property from the direct throw of material?

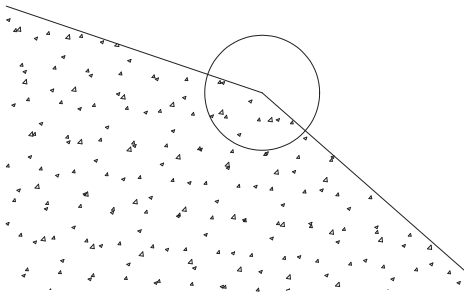
Should you wish a centered pattern for intersections and still protect people and property, you need to use all baffles on the hopper.



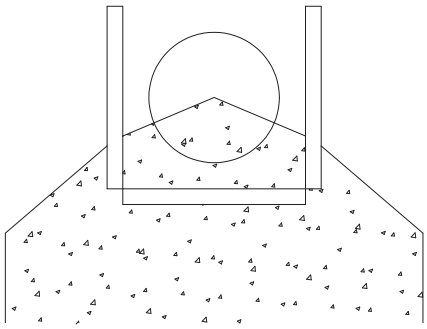
**Internal Baffle Effect**
Both internal baffles up. Pattern width depends on engine RPM. External baffles full up.



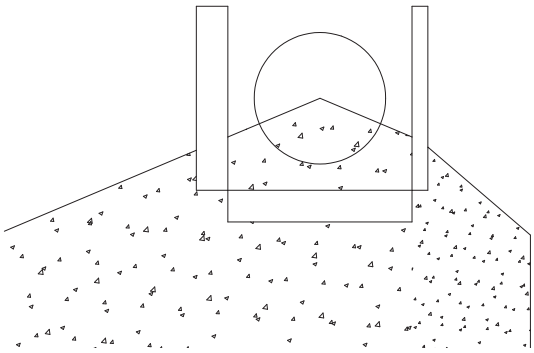
**Internal Baffle Effect**
Right baffle full up, left down. Pattern width depends on engine RPM. External baffles full up.



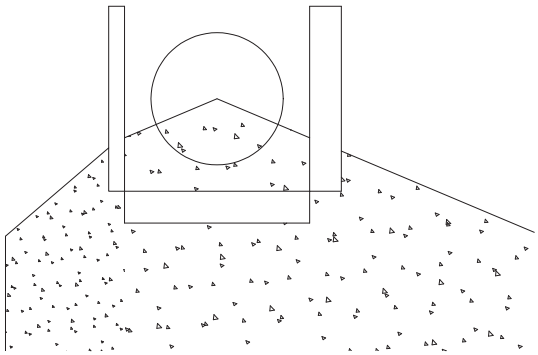
**Internal Baffle Effect**
Left baffle full up, right down. Pattern width depends on engine RPM. External baffles full up.



**External Baffle Effect**
All baffles properly adjusted for a confined spread pattern.



**External Baffle Effect**
Right-hand baffle deflects material down. Heavy on RH side. Adjust internal baffles to minimize streaking.



**External Baffle Effect**
Left-hand baffle deflects material down. Heavy on LH side. Note area of double coverage. Rear baffle is necessary to control double coverage area.

## AUXILIARY ENGINE DRIVEN UNITS

### Engine Preparation

| | |
|---|---|
| **CAUTION** | Never fill the tank with the engine running. Avoid spilling gasoline on a hot engine. This could cause an explosion and serious injury. Do not smoke while handling gasoline. |

Release the two clamps holding the engine hood and swing the hood back and down. Check the crankcase. See Lubrication Chart. Refer to engine manufacturer's manual for the proper amount and grade of oil. Fill crankcase as required.

Fill the fuel tank according to engine manual. Make sure the fuel shut-off valve is open if so equipped.

### Starting Starter-Alternator-Type Engines

| | |
|---|---|
| **NOTICE!** | Do not run engine in choke. |

1. Place engine switch in "On" position.
2. Press top of throttle switch 5–10 seconds for choke. Note: If switch has LED indicator, light will illuminate when unit is in choke.
3. Press engine "Start" until engine runs.
4. Press bottom of throttle switch to take engine out of choke. Note: If switch has LED indicator, light turns off when unit is out of choke.

The unit is equipped with an electric clutch. The procedure is as follows.

1. Set throttle to a fast idle, engage clutch, and bring engine RPM up to spreading speed. The clutch draws current only when engaged.
2. This clutch may be engaged or disengaged at any time. However, it is suggested that the clutch NOT be engaged with the engine operating at high speed. This prevents excessive shock loads from being transmitted to the entire system.
3. Drive to the area to be spread.
4. Open the feedgate to give the desired amount of material. This unit will deliver one cubic foot per minute at 3600 engine RPM with the feedgate open only 1/2 inch (13mm). It will deliver 6.3 cubic feet per minute with a 4 1/4 inch gate opening at the same engine speed. The amount of material will be decided by the engine RPM and the gate opening together.
5. Adjust engine throttle to desired speed and drive ahead.
6. When the pass is completed return engine to an idle. Disengage electric clutch.

### Carburetor Adjustments

Carburetors are adjusted at the factory and normally do not need adjustment unless they have been disassembled. If adjustment is necessary, refer to engine manufacturer's manual.

**HYDRAULIC DRIVEN UNITS**

**System Operating Parameters**

| | |
|---|---|
| Operating pressure: | 900 - 1200 PSI (62-82.75 bar) |
| Relief at: | 1500 PSI (103.42 bar) |
| Flow, Single: | 8.25 GPM (31.23 LPM) |
| Flow, Dual: | 12 GPM (45.42 LPM) |

Read the following before operating the spreader. Fill the hydraulic oil tank with hydraulic oil.

| | |
|---|---|
| **NOTICE!** | Make sure shut-off valve at bottom of tank is fully opened by turning handle counter-clockwise until it stops. |

Check for proper rotation of conveyor and spinner shaft. The conveyor should move towards the rear. The spinner should rotate clockwise when viewed from the top. If unit runs backwards, the hydraulic system is assembled incorrectly. Shut unit down and determine why. Correct the problem before further operation. Refill the tank after unit has been running long enough to circulate oil through all lines.

**Control Panel – Type II**

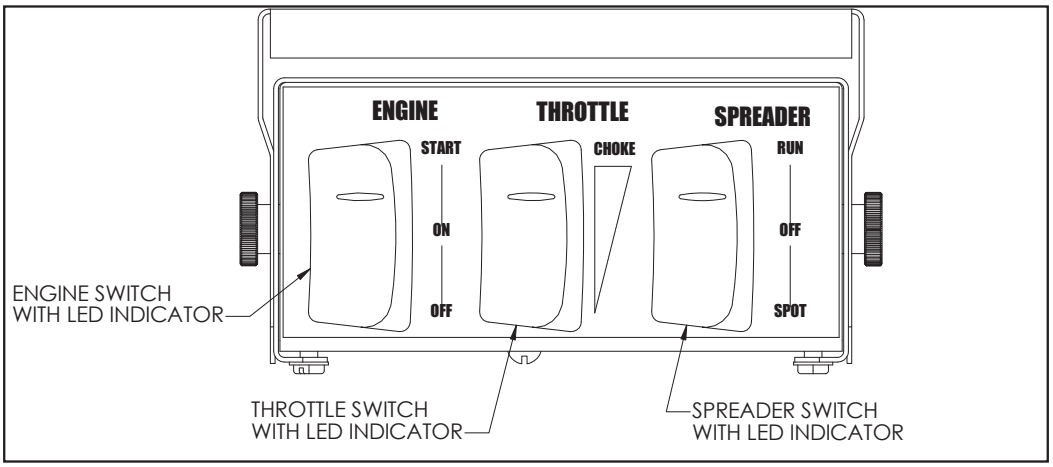



**Figure 3 – Control Panel**

| | |
|---|---|
| **NOTICE!** | Do not run engine in choke. |

Engine switch - Starts and stops engine.

Throttle switch - Controls engine speed.

Push top of switch to choke—light illuminates when engine in choke.

Back off from choke to run RPM.

Spreader switch - Controls conveyor and spinner function—light illuminates when spreading.

Run - Push for continuous spreading.

Off - Turns both conveyor and spinner off.

Spot - Spreads only while being pushed, for “spot” spreading.

| | |
|---|---|
| **WARNING** | Shut off all power and allow all moving parts to come to rest before performing any maintenance operation. Otherwise, you could be injured. |

**DRIVE CHAINS**

| | |
|---|---|
| **CAUTION** | Make sure truck engine is shut down when working on drive chain. If drive chain moves, you could be injured. |

Twice a year remove drive chains. Soak chain in a solvent to remove all old or contaminated oil. Check chain for any frozen links. Soak chain in SAE 10 oil. Soak chain until, when flexed, no bubbles appear on chain. Reinstall chains. Chain should be tensioned enough to prevent whipping at operating speed. Over-tensioning of chain will create excessive heat that will freeze chain or cause damage to other parts of drive system.

**ENGINE**

Refer to engine maintenance instructions furnished by engine manufacturer.

**Carburetor Adjustments**

Carburetors do not normally require adjustment unless they have been disassembled. Refer to engine manufacturer's manual if adjustment is necessary.

**HYDRAULIC SYSTEM**

The use of proper oil in the hydraulic system is one of the most important factors for satisfactory operation. Utmost cleanliness in handling the oil cannot be stressed enough. Keep the hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in extremely clean measures and funnels.

Refer to the *Lubricant and Hydraulic Oil Specifications* section of the manual for selection of the proper hydraulic fluid for use in the hydraulic system.

| | |
|---|---|
| **DANGER** | Do not check leaks with hands while system is operating as high pressure leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated. Relieve pressure before disconnecting hydraulic lines or working with system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. |

| | |
|---|---|
| **WARNING** | DO NOT check for hydraulic leaks adjacent to moving parts while system is operating as there may be danger of entanglement! |

**Service Schedule**

1. Check the hydraulic oil daily by means of dipstick. Add oil if required. Periodically inspect the hoses and fittings for leaks.

| | |
|---|---|
| **NOTICE!** | 2. CHANGE THE HYDRAULIC OIL FILTER AFTER THE FIRST WEEK (OR NOT MORE THAN 50 HOURS) OF OPERATION ON A UNIT. |

3. After first filter change, replace filter when indicator reaches Danger Zone.
4. The reservoir should be drained through drain plug (not through suction outlet), flushed, and refilled annually, or the oil should be changed if it shows any signs of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

**GEAR CASE**

Drain oil in a new unit after first two weeks (or not more than 100 hours) of operation, and flush gear case thoroughly with light oil. Refer to *Lubricant and Hydraulic Oil Specifications* section for proper grade oil. Refill gear case up to level plug or 3/4 pint of recommended lubricant. (See "Checking Installation" in Installation Instructions.) After initial change, oil should be changed every 2,000 hours of operation or annually, whichever occurs first.

Check gear case oil level monthly.

**BEARINGS**

Grease in a bearing acts to prevent excessive wear of parts, protects ball races and balls from corrosion and aids in preventing excessive heat within the bearing. It is very important the grease maintains its proper consistency during operation. It must not be fluid and it must not channel.

Make sure all fittings are thoroughly cleaned before grease is injected. Points to be lubricated by means of a grease gun have standard grease fittings.

Lubricate bearings by pumping grease slowly until it forms a slight bead around the seals. This bead indicates adequate lubrication and also provides additional protection against the entrance of dirt.

**FASTENERS**

Tighten all screw fasteners to recommended torques after first week of operation and annually thereafter. If loose fasteners are found at anytime, tighten to recommended torque. Replace any lost or damaged fasteners or other parts immediately. Check body mounting hardware every week.

**CLEAN UP**

| | |
|---|---|
| **NOTICE!** | High pressure wash can inject water and/or salt into control components, causing damage. Use caution when cleaning these areas. |

Thoroughly wash unit every two to three days during the operating season to maintain minimal maintenance operation. Hose unit down under pressure to free all sticky and frozen material.

It is important the unit be thoroughly cleaned at the end of each operating season. All lubrication and maintenance instructions should be closely followed. Repaint worn spots to prevent formation of rust.

**CONVEYOR CHAIN**

Hose down unit and remove any material build-up on sprockets and under chain.

| | |
|---|---|
| **NOTICE!** | The conveyor will move away from the bottom panel if material accumulates under the conveyor or on the sprockets. The more material that accumulates, the closer the chain will come to the chain shields. If the conveyor should catch a chain shield, it could permanently damage the conveyor, the chain shields or the unit. Do not remove material while conveyor or spinner is running! |

Lubricate conveyor chain at least once a week. Shut down spinner and run conveyor slowly to lubricate chain. Use a mixture of 75% diesel fuel and 25% SAE 10 oil in a pressurized hand spray gun. Spray oil mixture between links of chain through openings provided at rear end of sill or from front outside body when clearance is adequate. Do this at least once a week and after each unit washing. Allow to dry before lubricating.

| | |
|---|---|
| **DANGER** | Stay out of body when conveyor is running. Stay clear of all moving parts. Entanglement of clothes, any part of your body or anything you have in your hands can cause serious injury. Do not use bar, rod or hammer on conveyor while it is moving—if it gets caught it could cause injury! |

Proper chain tension is also a factor in chain and sprocket life. The proper chain tension is illustrated in Figure 4. Be sure the chain is tensioned equally on both sides. This adjustment is made on each side of the unit at the idler bearings.

Figure 4 - Chain Tension to be Measured from Rear of Sill - Proper Tension 26” to 30” (66 to 76.2 cm).

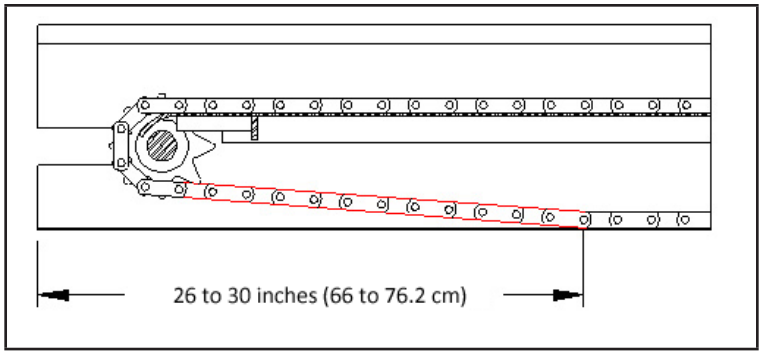



**Figure 4 - Adjusting Chain Tension**

Conveyor chains that are too tight will tend to stretch. This will cause excess sprocket wear and eventually cause breakage. Excess slack presents the possibility of the chain catching on sub-frame parts. Bent or distorted chain bars will cause damage to the body as well. Straighten or replace bent or distorted chain bars immediately.

**REPLACEMENT OF CONVEYOR**

Check drive and idler sprockets for wear and replace if necessary.

**Removal**

Remove spreader from vehicle. Take spinner assembly off unit. Rotate conveyor so that “master link pins”, attached with cotter pins, can be accessed at rear of spreader. Loosen idler screws on both sides. Remove cotter pins and “master link pins” at rear of unit. Take chain off rear sprockets and pull chain from front of unit.

**Installation**

Remove “master link pins” from the new chain. Lay the new chain at the front of the unit with the chain bars up/ HI-WAY down and the barrel end (Figure 5) of the master link facing the unit. (Installation is easier if you can place the chain on something that is level with the bottom.) Insert the chain between the bottom panel and the cross angles with the barrel end first. Slide the remaining half on top of the bottom panel with the open end (Figure 5) of the master link first. Push the chain along the bottom panel until the master link reaches the rear of the unit so the ends meet at rear of unit. Make sure the chain is positioned on all the sprockets. Install the “master link pins” previously removed—you may have to rotate the sprockets by hand to align the link’s pin holes.

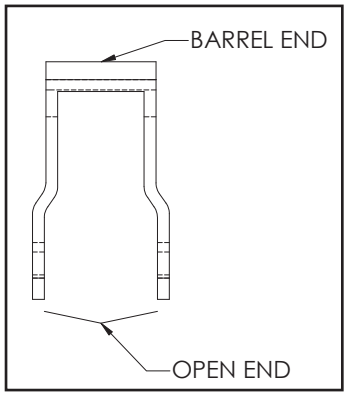



**Figure 5 – Chain Link**

Tension the chain by tightening the idler screws. Reinstall spinner assembly according to *Spinner Assembly Installation* for *V Box Deicing Spreader Installation Instructions* at **www.highwayequipment.com** and install the spreader according to “Mounting” section, both in the Installation Instructions. Be sure to lubricate the idler bearings and chain before operation.

Make sure the drive sprocket drives against the barrel end of the links—Not against the connecting pins.

Open ends of chain links face front of unit on top of bottom panel. Likewise, open ends face rear of unit underneath unit.

| | |
|---|---|
| **NOTICE!** | The lubricant distributor and/or supplier is to be held responsible for the results obtained from their products. Procure lubricants from distributors and/or suppliers of unquestionable integrity, supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classification recommended by reputable oil companies. |

**ENGINE**

Refer to engine manufacturer's manual for oil recommendations.

**HYDRAULIC SYSTEM**

The following are the recommended procedures for selecting the proper hydraulic fluid for use in the hydraulic system. Select a major brand industrial PREMIUM QUALITY (anti-wear type) hydraulic oil to provide viscosity between 100-200 SSU at operating temperature. Premium hydraulic oils with viscosity indexes of 95 or above will provide the following temperature ranges :

| INDUSTRY IDENTIFICATION VISCOSITY GRADE | OPERATING TEMPERATURE | VISCOSITY |
|---|---|---|
| 150 SSU | 122° F (50° C)<br>84° F (28.9° C) | 100 SSU<br>200 SSU |
| 225 SSU | 140° F (60° C)<br>107° F (41.7° C) | 100 SSU<br>200 SSU |
| 300 SSU | 150° F (66.6° C)<br>116° F (46.1° C) | 100 SSU<br>200 SSU |
| 450 SSU | 165° F (73.9° C)<br>130° F (54.5° C) | 100 SSU<br>200 SSU |
| 600 SSU | 182° F (83.3° C)<br>145° F (62.8° C) | 100 SSU<br>200 SSU |

If, because of necessity or convenience, it is desirable to use an automotive engine oil, multi-viscosity oils of SC rating (formerly MS quality) which will provide between 100-200 SSU at operating temperature can be used. These will provide proper viscosity over a wide range. For example:

| SAE VISCOSITY GRADE | OPERATING TEMPERATURE | VISCOSITY |
|---|---|---|
| 10W-30 | 130° F (54.5° C) | 100 SSU |
| | 100° F (37.8° C) | 200 SSU |
| 10W-40 | 190° F (87.8° C) | 100 SSU |
| | 140° F (60° C) | 200 SSU |

**GEAR CASE LUBRICANT**

Gear cases are factory equipped with synthetic oil for best performance at high loads. Lubricate the gear case with multi-purpose gear lubricating oil conforming to MIL-L2105B according to the chart below:

| Part | Refill Quantity | 40° to 120° F (4.5° C) | Below 40° F (49° C) |
|---|---|---|---|
| Gear Case | .75 pints (.35 liters) | SAE 85W 140 | SAE 88W 90 |

**GREASE GUN LUBRICANT**

Use a waterproof ball and roller bearing lithium base lubricant with a minimum melting point of 300° F (149° C). This lubricant should have a viscosity which assures easy handling in the pressure gun at prevailing atmospheric temperatures. The grease should conform to NLGI No. 2 consistency.

# LUBRICATION CHART

**WARNING** Shut off all power and allow all moving parts to come to rest before performing any maintenance operation.

The spreader should be regularly lubricated with the lubricants recommended in this manual in accordance with the following chart:

| LOCATION | PLACES | METHOD | FREQUENCY |
|---|---|---|---|
| **Hydraulic Pump Drive** | | | |
| Transmission PTO - Slip Joint | 1 | Grease | Weekly |
| Transmission PTO - U-Joint | 2 | Grease Gun | Monthly |
| **Hydraulic System** | | | |
| Reservoir | 1 | Check Daily; Change Annually | |
| Filter | 1 | Check Daily; Change when indicator is red | |
| **Drive Chains** | | | |
| Main Drive Chain - Engine to Gear Case | 1 | Spray Oil | Daily |
| Spinner Drive Chain - Gear Case to Spinner | 1 | Spray Oil | Daily |
| **Conveyor** | | | |
| Dragshaft Bearings | 2 | Grease Gun | Weekly |
| Idler Adjuster | 2 | Hand Grease | Weekly |
| Idler Shaft Bearing | 2 | Grease Gun | Weekly |
| Chain | 2 Strands | Spray Oil | Weekly |
| Input Shaft Bearing - Gear Case | 1 | Grease Gun | Weekly |
| Gear Case | 1 | Fill Through Vent Plug | Check monthly; Change annually. |
| **Spinner** | | | |
| Shaft Bearings | 2 | Grease Gun | Weekly |

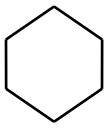
NOTE: Unusual conditions, such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.

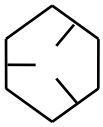
* See *Lubricant and Hydraulic Oil Specifications* for types of lubricants and oil to be used.

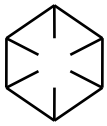
| SYMPTOM | REMEDY |
|---|---|
| 1. Unit speed does not increase with the dial setting. | a. Increase truck engine speed.<br>b. Check condition of pump.<br>c. Check for adequate PTO percent. |
| 2. Unit stalls under load. | Check circuit pressure. 900 - 1200 PSI (62 - 83 bar) maximum with relief valve dumping at 1500 PSI (103.5 bar). |
| 3. Unit speed fluctuates momentarily when main control is first turned on. | a. Cold oil. Wait until oil has warmed up.<br>b. Change to lighter weight oil. |
| 4. Pump blows seals at start-up. | Pump installed backwards, replace seals and reverse pump in drive line. (Note arrow on pump.) |

# STANDARD TORQUES NATIONAL COARSE (NC) CAP SCREWS

CAP SCREW GRADE IDENTIFICATION - MARKINGS ON HEAD

SAE GRADE 2  NO MARKINGS

SAE GRADE 5  THREE MARKS - 120 DEGREES APART

SAE GRADE 8  SIX MARKS - 60 DEGREES APART

USE GRADE 2 TORQUES FOR STAINLESS STEEL FASTENERS AND CARRIAGE BOLTS.

| CAP SCREW SIZE | TORQUE - FOOT-POUNDS | | | | | |
|---|---|---|---|---|---|---|
| | GRADE 2 | | GRADE 5 | | GRADE 8 | |
| | DRY | LUBE | DRY | LUBE | DRY | LUBE |
| 1/4” | 5 | 4 | 8 | 6 | 12 | 9 |
| 5/16” | 11 | 8 | 17 | 13 | 25 | 18 |
| 3/8” | 20 | 15 | 30 | 23 | 45 | 35 |
| 7/16” | 30 | 24 | 50 | 35 | 70 | 55 |
| 1/2” | 50 | 35 | 75 | 55 | 110 | 80 |
| 9/16” | 65 | 50 | 110 | 80 | 150 | 110 |
| 5/8” | 90 | 70 | 150 | 110 | 220 | 170 |
| 3/4” | 100 | 120 | 260 | 200 | 380 | 280 |
| 7/8” | 140 | 110 | 400 | 300 | 600 | 460 |
| 1” | 220 | 160 | 580 | 440 | 900 | 650 |

Hi-Way NEW LEADER
Highway Equipment Company
*Building the best since 1939.*

Order from the **AUTHORIZED DEALER** in your area.

1. Always give the pertinent model and serial number.
2. Give part name, part number and the quantity required.
3. Give the correct address to where the parts are to be shipped, and the carrier if there is a preference.

Unless claims for shortages or errors are made immediately upon receipt of goods they will not be considered. Any part returns should be directed through the dealer from which they were purchased.

When broken goods are received, a full description of the damage should be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can always be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Our responsibility ceases upon delivery of shipment to the transportation company from whom a receipt is received showing that shipment was in good condition when delivered to them, therefore, claims (if any) should be filed with the transportation company and not with Highway Equipment Company.

If your claims are not being handled (by the transportation company) to your satisfaction, please call the Parts Manager at Highway Equipment Company (319-363-8281) for assistance.

In the parts list the following symbols and abbreviations stand for:

* - Not Shown
AR – As Required
CS – Carbon Steel
SS – Stainless Steel

The parts listed under the different steel types (CS, and 304 SS) are for that type of unit and do not necessarily mean the part is made of that type of steel.

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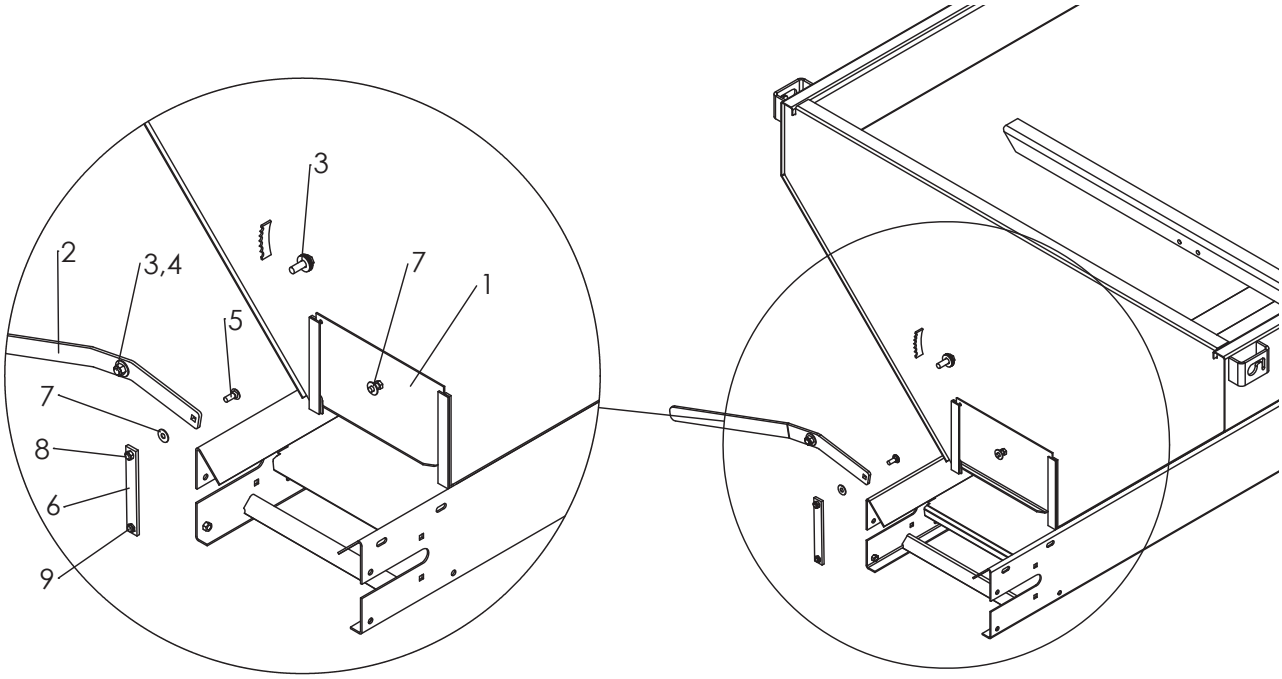
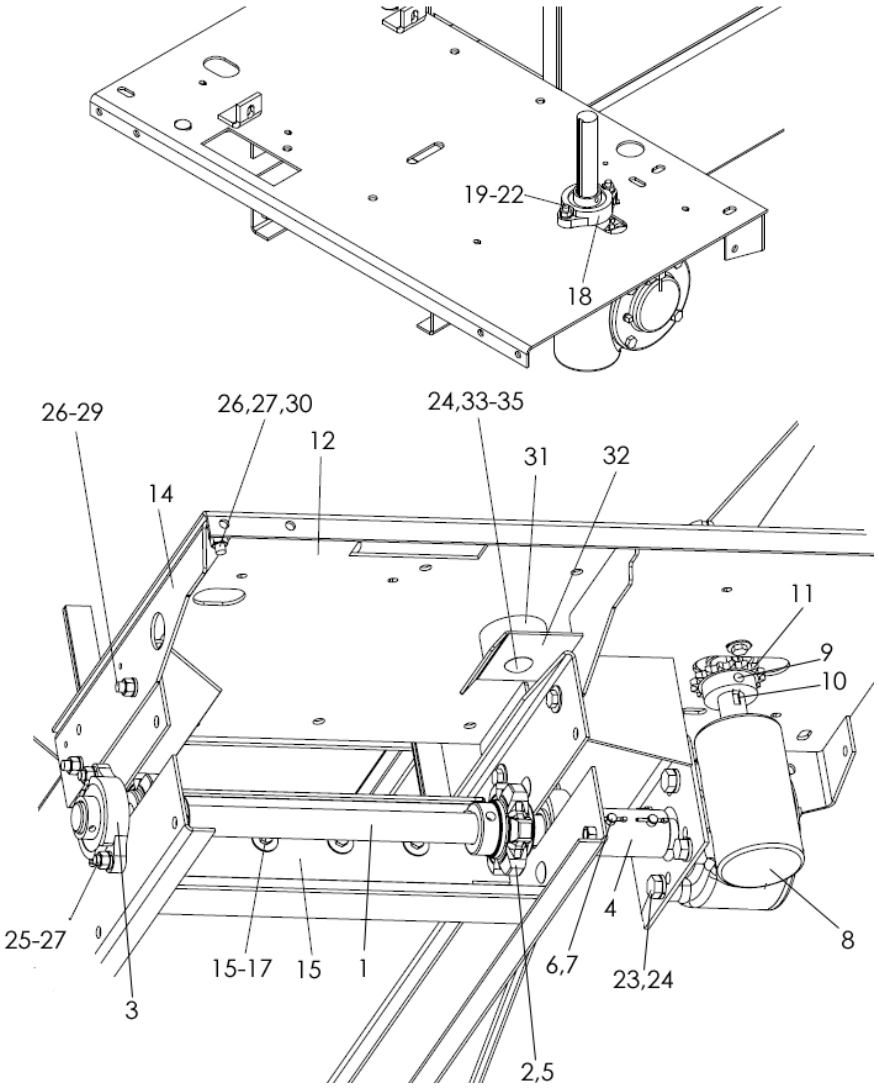



| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| 1 | 79299 | 77756 | Feedgate Wldmt | 1 |
| 2 | 84267 | 84268 | Lever - Wldmt | 1 |
| 3 | 20695 | 36426 | Washer - Flat 1/2 | AR |
| 4 | 20680 | 39016 | Nut – Lock 1/2 | 1 |
| 5 | 20318 | 36408 | Bolt – Carriage 3/8 x 1 | 1 |
| 6 | 84261 | 84262 | Link | 1 |
| 7 | 20693 | 36425 | Washer – Flat 3/8 | 2 |
| 8 | 20678 | 72054 | Nut – Lock 3/8 | 1 |
| 9 | 307394 | 307395 | Nut - Lock Thin 3/8 -16NC SS | 1 |



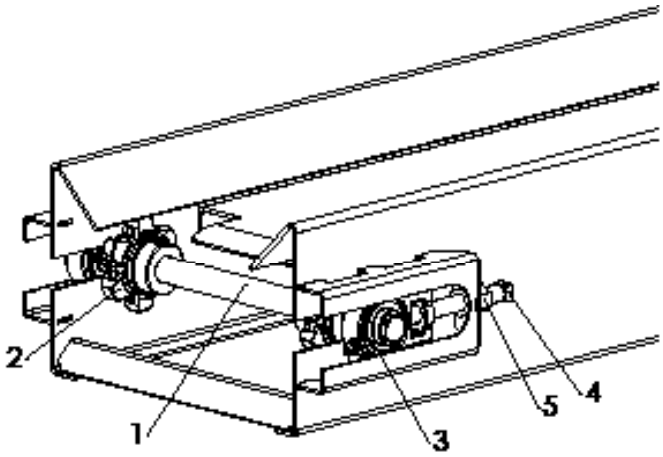

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 79279 | 79279 | Shaft – Drive | 1 |
| 2 | 99414 | 99414 | Sprocket – Drive | 2 |
| 3 | 22568 | 22568 | Bearing – Flange | 2 |
| 4 | 26652 | 26652 | Coupling – Drive Shaft, Engine & Hydraulic | 1 |
| | 79709 | 79709 | Coupling – Drive Shaft, Direct Hydraulic | 1 |
| 5 | 2152 | 2152 | Key | 2 |
| 6 | 6122 | 6122 | Pin – Clevis, Engine & Hydraulic | 2 |
| | 6123 | 6123 | Pin – Clevis, Direct Hydraulic | 1 |
| 7 | 20817 | 20817 | Pin – Cotter, Engine & Hydraulic | 2 |
| | 20811 | 20811 | Pin – Cotter, Direct Hydraulic | 1 |

## CONVEYOR DRIVE CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 8 | 27118 | 27118 | Gear Case – Conveyor, Engine Drive | 1 |
| | 11428 | 11428 | Gear Case – Conveyor, Hydraulic Drive | 1 |
| | 42787 | 42787 | Plug – Pull | 1 |
| 9 | 26810 | 26810 | Sprocket | 1 |
| 10 | 6137 | 6137 | Key | 1 |
| 11 | 20748 | 20748 | Screw – Set | 2 |
| 12 | 301222 | 301223 | Base – Engine Wldmt | 1 |
| | 301274 | 301275 | Base – Hydraulic Wldmt | 1 |
| 13 | 301257 | 301258 | Support – Engine Base | 1 |
| | 301282 | 301283 | Support – Hydraulic Base | 1 |
| 14 | 79313 | 79313 | Belt – Wiper | 1 |
| 15 | 20005 | 36395 | Cap Screw – 1/4 x 1 | 6 |
| 16 | 21423 | 21423-X1 | Washer – Flat 1/4 SS | 6 |
| 17 | 20642 | 36412 | Nut – Hex 1/4 | 6 |
| 18 | 22563 | 22563 | Bearing – Flange | 1 |
| 19 | 20037 | 36397 | Cap Screw – 5/16 x 1 1/4 | 2 |
| 20 | 20692 | 36424 | Washer – Flat 5/16 | 2 |
| 21 | 20711 | 36419 | Washer – Lock 5/16 | 2 |
| 22 | 20643 | 36413 | Nut – Hex 5/16 | 2 |
| 23 | 20127 | 36401 | Cap Screw – 1/2 x 1 | 4 |
| 24 | 20714 | 36422 | Washer – Lock 1/2 | AR |
| 25 | 20319 | 36409 | Bolt – Carriage 3/8 x 1 1/4 | 4 |
| 26 | 20712 | 36420 | Washer – Lock 3/8 | 10 |
| 27 | 20644 | 36414 | Nut – Hex 3/8 | 10 |
| 28 | 20067 | 36398 | Cap Screw – 3/8 x 1 | 4 |
| 29 | 20693 | 36425 | Washer – Flat 3/8 | 4 |
| 30 | 20318 | 36408 | Bolt – Carriage 3/8 x 1 | 2 |
| 31 | 81954 | 81954 | Block - Tightener | 1 |
| 32 | 81955 | 81955 | Plate - Chain Guide | 1 |
| 33 | 20435 | 20435 | Bolt - Carriage 1/2 x 2-1/4 | 1 |
| 34 | 20695 | 36426 | Washer - Flat 1/2 | 1 |
| 35 | 20646 | 36416 | Nut - Hex 1/2 | 1 |

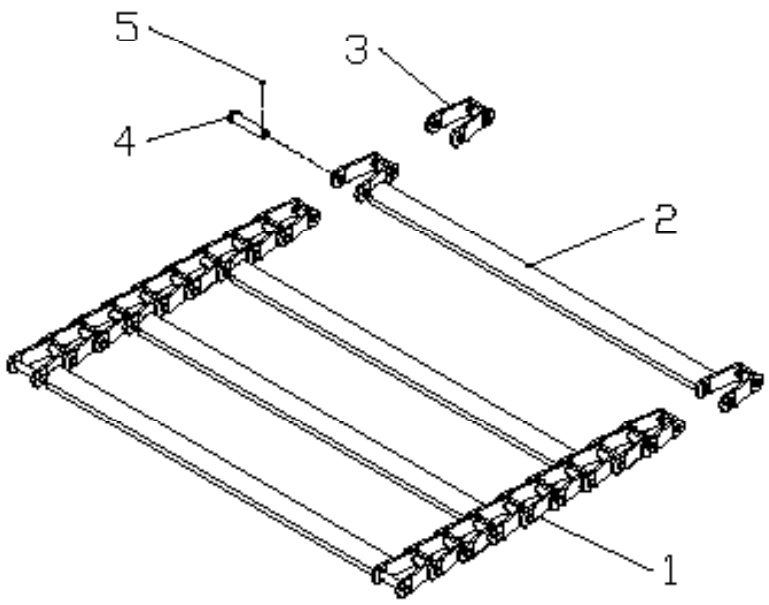
* - Not Shown

# CONVEYOR IDLER




| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 88901 | 88901 | Shaft – Idler | 1 |
| 2 | 99413 | 99413 | Sprocket – Idler | 2 |
| 3 | 99415 | 99415 | Bearing | 2 |
| 4 | 21398 | 77074 | Screw – Set 5/8 | 2 |
| 5 | 20648 | 36417 | Nut – Hex 5/8 | 2 |

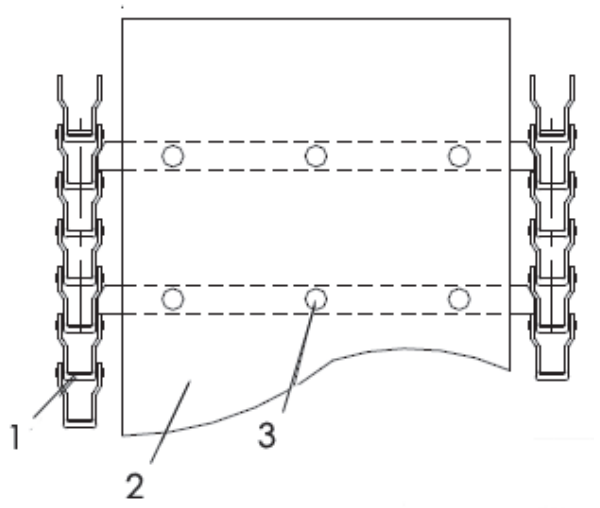
# CONVEYOR CHAIN




| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 79343 | Chain – Conveyor Assy, 7’ Unit | 1 |
| | 79305 | Chain – Conveyor Assy, 8’ Unit | 1 |
| | 79305-X1 | Chain – Conveyor Assy, 9’ Unit | 1 |
| | 84723 | Chain – Conveyor Assy, 10’ Unit | 1 |
| 2 | 79697 | Bar - Chain Wldmt | AR |
| 3 | 26701 | Link – Chain | AR |
| 4 | 26702 | Pin – Chain | AR |
| 5 | 20811 | Pin – Cotter | AR |

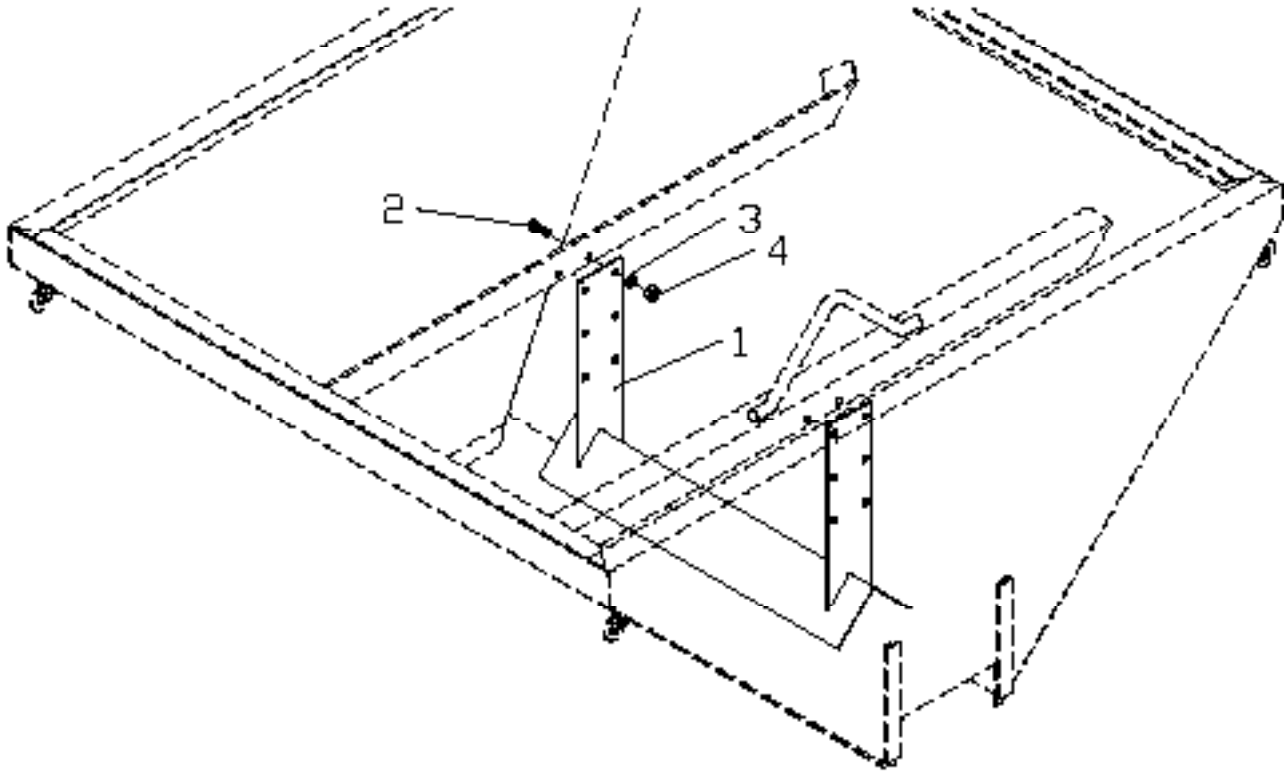
AR - As Required

# #4 BELT-OVER-CHAIN



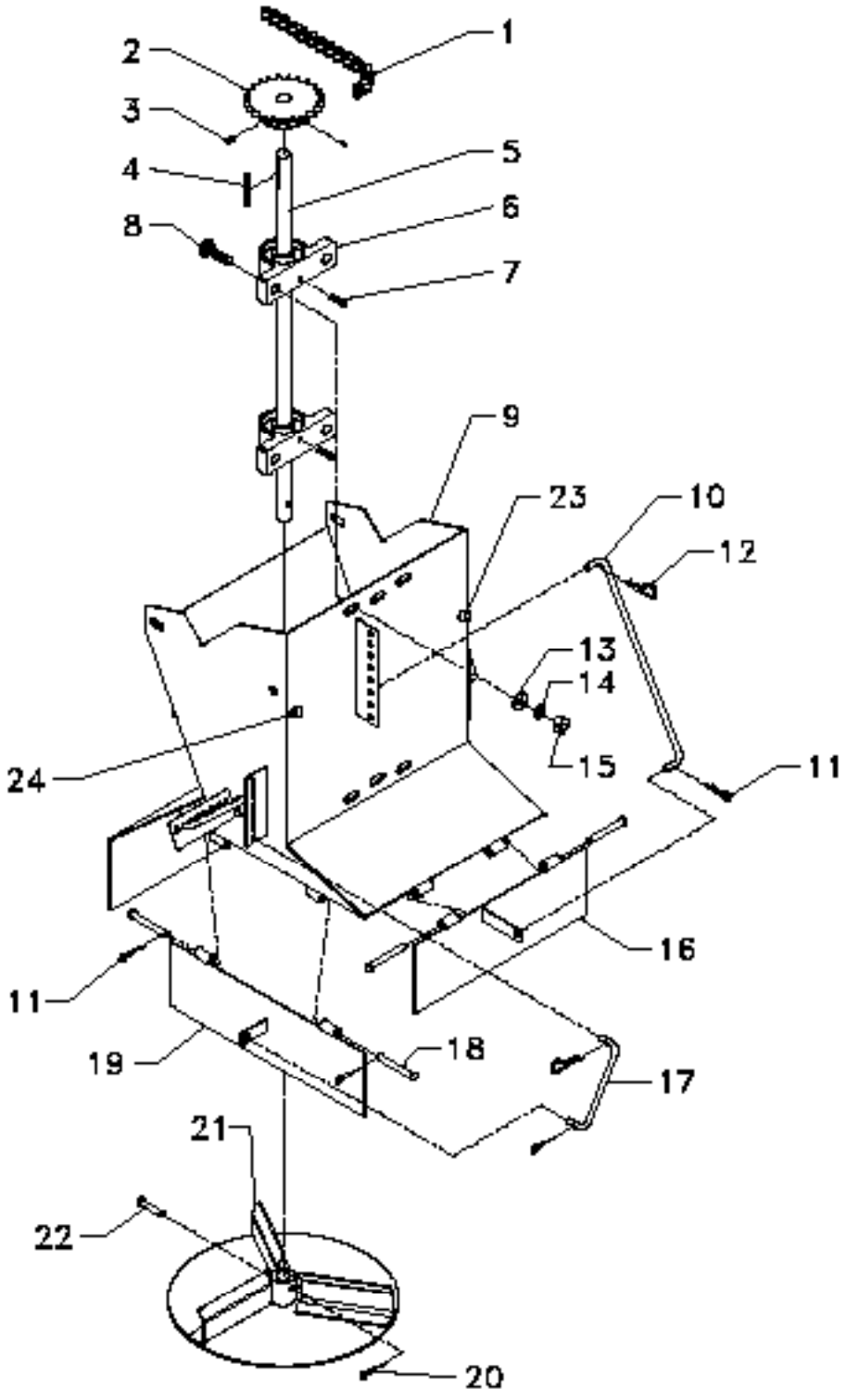

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| | 74324-X1 | Conveyor - Belt-Over-Chain 9’ #4 Assy | 1 |
| | 74324-X2 | Conveyor - Belt-Over-Chain 10’ #4 Assy | 1 |
| | 74324-X3 | Convyeor - Belt-Over-Chain 11’ #4 Assy | 1 |
| 1 | 84723-X1 | Chain - 9’ #4 16.5” Assy | 1 |
| | 84723-X2 | Chain - 10’ #4 16.5” Assy | 1 |
| | 84723-X3 | Chain - 11’ #4 16.5” Assy | 1 |
| 2 | 80859 | Belt | AR |
| 3 | 97038 | Rivet - Truss Head 1/4 x 3/8 | AR |
| 4 | *73559-X1 | Lacing - #2 SS Clipper | AR |
| 5 | *73558 | Pin | 1 |

* - Not Shown AR - As Required




| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 79573 | 77878 | V – Inverted 7’ Unit | 1 |
| | 79574 | 77880 | V – Inverted 8’ Unit | 1 |
| | 79574-X1 | 77880-X1 | V – Inverted 9’ Unit | 1 |
| | 99078 | 99093 | V – Inverted 10’ Unit | 1 |
| 2 | 20067 | 36398 | Cap Screw – 3/8 x 1 | 4 |
| 3 | 20712 | 36420 | Washer – Lock 3/8 | 4 |
| 4 | 20644 | 36414 | Nut – Hex 3/8 | 4 |

# SPINNER HOPPER



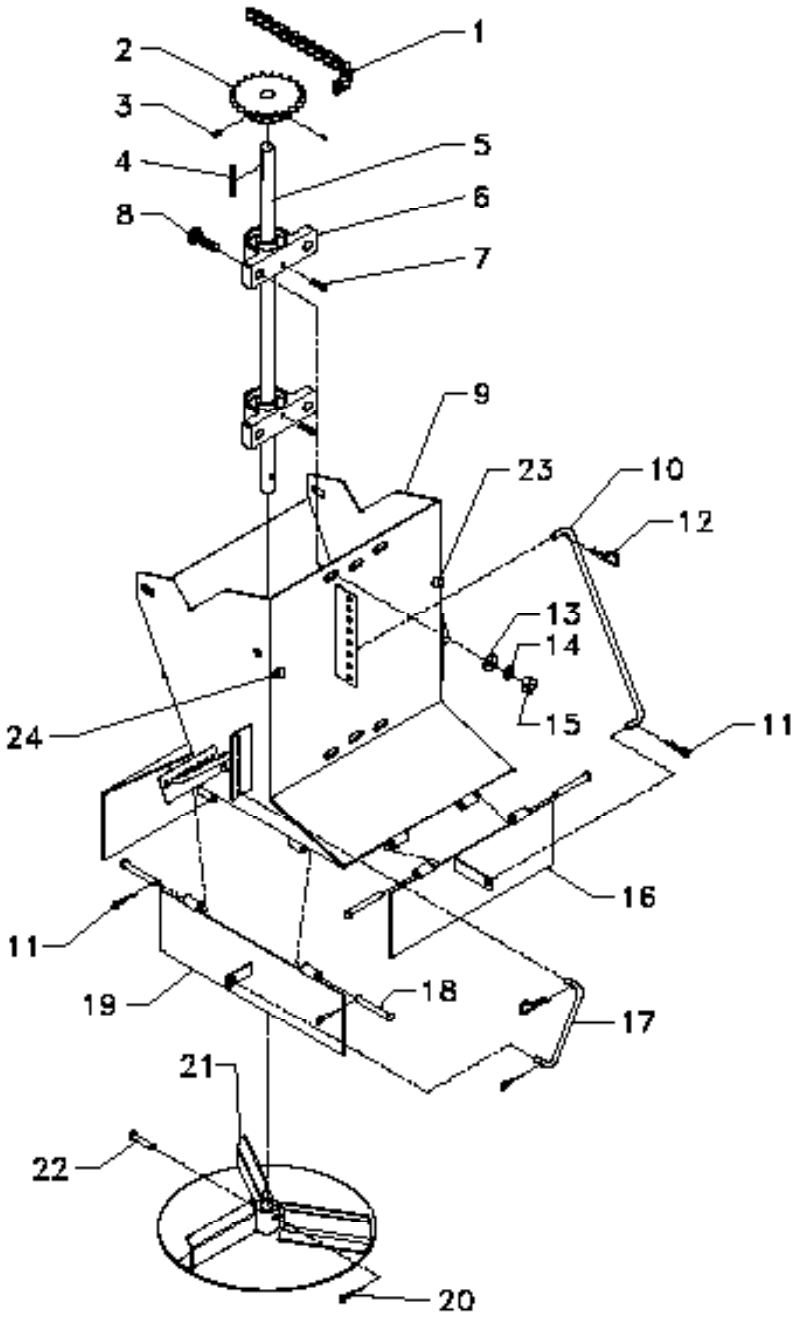

Note: Standard height, engine/single hydraulic drive.

## SPINNER HOPPER CONTINUED

| ITEM | PART NO. CS | PART NO. SS | DESCRIPTION | QTY |
|---|---|---|---|---|
| | 90423 | 90425 | Hopper – Spinner Assy, Engine Drive | |
| | -- | 90425-X1 | Hopper – Spinner Assy, Hydraulic Drive | |
| 1 | 79566 | 79566 | Chain – Roller, Engine Drive only | 1 |
| 2 | 23742 | 23742 | Sprocket – Engine Drive | 1 |
| | * 11431-X1 | 11431-X1 | Coupling – Motor, Hydraulic Drive | 1 |
| 3 | 20735 | 20735 | Screw – Set | 2 |
| 4 | 6134 | 6134 | Key – Square | 1 |
| 5 | 26889 | 26889 | Shaft – Spinner | 1 |
| 6 | 26816 | 26816 | Bearing | 2 |
| 7 | 79848 | 79848 | Zerk – Grease, Extended | 2 |
| 8 | 20319 | 36409 | Bolt – Carriage 3/8 x 1-1/4 | 4 |
| 9 | 90435 | 90437 | Hopper – Spinner Wldmt | 1 |
| 10 | 79652 | 79653 | Rod – Rear Adjustment | 1 |
| 11 | 20810 | 76822 | Pin – Cotter | 11 |
| 12 | 40562 | 41779 | Pin – Hair | 5 |
| 13 | 20693 | 36425 | Washer – Flat 3/8 | 4 |
| 14 | 20712 | 36420 | Washer – Lock 3/8 | 4 |
| 15 | 20644 | 36414 | Nut – Hex 3/8 | 4 |
| 16 | 79641 | 79643 | Baffle – Rear Wldmt | 1 |
| 17 | 79650 | 79651 | Rod – Side Adjustment | 4 |
| 18 | 71066 | 79654 | Pin – Clevis 5/16 x 2-1/2 | 6 |
| 19 | 79632 | 79634 | Baffle – Side Wldmt | 2 |
| 20 | 20811 | 20811 | Pin – Cotter | 1 |
| 21 | 79290 | 79290 | Disc – Spinner Wldmt | 1 |
| 22 | 6299 | 6299 | Pin – Clevis 1/4 x 1-1/2 | 1 |
| 23 | 90554 | 90558 | Baffle – Inner RH | 1 |
| 24 | 90555 | 90559 | Baffle – Inner LH | 1 |
| 25 | *20067 | 36398 | Cap Screw - 3/8 x 1 | 6 |
| 26 | *20644 | 36414 | Nut - Hex 3/8 | 6 |
| 27 | *20712 | 36420 | Washer - Lock 3/8 | 6 |
| 28 | *20693 | 36425 | Washer - Flat 3/8 | 6 |

* - Not Shown  Items 25-28 used to mount hopper

## SPINNER HOPPER - EXTENDED

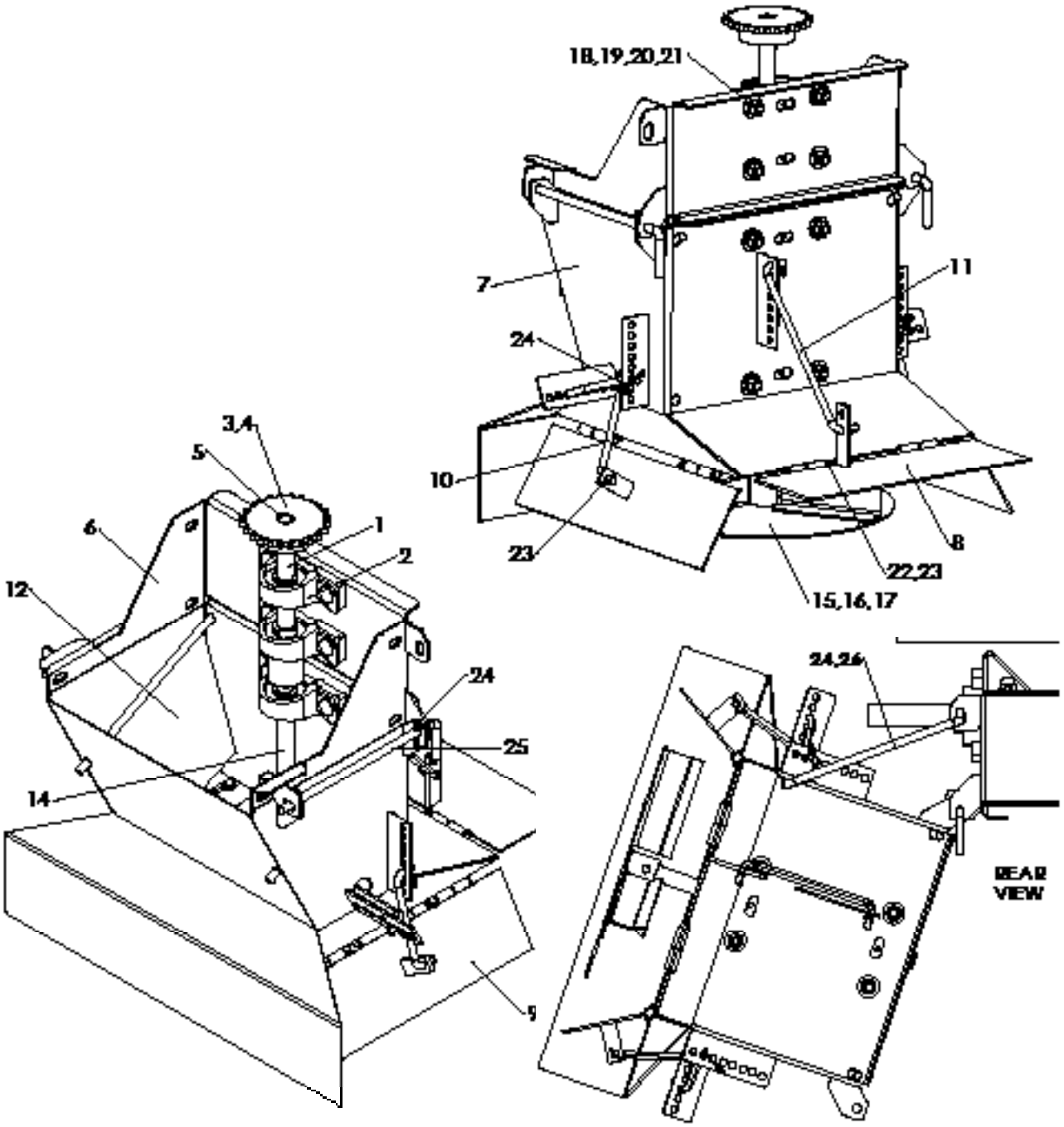


## SPINNER HOPPER - EXTENDED CONTINUED

| ITEM | PART NO. CS | PART NO. SS | DESCRIPTION | QTY |
|---|---|---|---|---|
| | 90426 | 90428 | Hopper – 12” Ext. Spinner Assy, Engine Drive | |
| | 90426-X3 | 90428-X3 | Hopper – 12” Ext. Spinner Assy, Hydraulic Drive | |
| | -- | 97386 | Hopper – 24” Ext. Spinner Assy, Engine Drive | |
| | -- | 98299 | Hopper – 24” Ext. Spinner Assy, Hydraulic Drive | |
| 1 | 79566 | 79566 | Chain – Roller, Engine Drive only | 1 |
| 2 | 23742 | 23742 | Sprocket – Engine Drive | 1 |
| | * 11431-X1 | 11431-X1 | Coupling – Motor, Hydraulic Drive | 1 |
| 3 | 20735 | 20735 | Screw – Set 1/4 x 1/4 | 2 |
| 4 | 6134 | 6134 | Key – Square 3/16 x 1-1/2, Engine Drive | 1 |
| | 6135 | 6135 | Key – Square 3/16 x 1, Hydraulic Drive | 1 |
| 5 | 26890 | 26890 | Shaft – Spinner 12” Ext. | 1 |
| | -- | 97391 | Shaft – Spinner 24” Ext. | 1 |
| 6 | 26816 | 26816 | Bearing | 3 |
| 7 | 79848 | 79848 | Zerk – Grease Extended | 2 |
| 8 | 20319 | 36409 | Bolt – Carriage 3/8 x 1-1/4 | 6 |
| 9 | 90438 | 90440 | Hopper – Spinner Wldmt 12” Ext. | 1 |
| | -- | 97387 | Hopper – Spinner Wldmt 24” Ext. | 1 |
| 10 | 79652 | 79653 | Rod – Rear Adjustment | 1 |
| 11 | 20810 | 76822 | Pin – Cotter | 11 |
| 12 | 40562 | 41779 | Pin – Hair | 5 |
| 13 | 20693 | 36425 | Washer – Flat 3/8 | 6 |
| 14 | 20712 | 36420 | Washer – Lock 3/8 | 6 |
| 15 | 20644 | 36414 | Nut – Hex 3/8 | 6 |
| 16 | 79641 | 79643 | Baffle – Rear Wldmt | 1 |
| 17 | 79650 | 79651 | Rod – Side Adjustment | 4 |
| 18 | 71066 | 79654 | Pin – Clevis 5/16 x 2-1/2 | 6 |
| 19 | 79632 | 79634 | Baffle – Side Wldmt | 2 |
| 20 | 20811 | 20811 | Pin – Cotter | 1 |
| 21 | 79290 | 79290 | Disc – Spinner Wldmt | 1 |
| 22 | 6299 | 6299 | Pin – Clevis 1/4 x 1-1/2 | 1 |
| 23 | 90554 | 90558 | Baffle – Inner RH | 1 |
| 24 | 90555 | 90559 | Baffle – Inner LH | 1 |
| 25 | *20067 | 36398 | Cap Screw - 3/8 x 1 | 6 |
| 26 | *20644 | 36414 | Nut - Hex 3/8 | 6 |
| 27 | *20712 | 36420 | Washer - Lock 3/8 | 6 |
| 28 | *20693 | 36425 | Washer - Flat 3/8 | 6 |

* - Not Shown  Items 25-28 used to mount hopper

# SPINNER HOPPER - FLIP UP



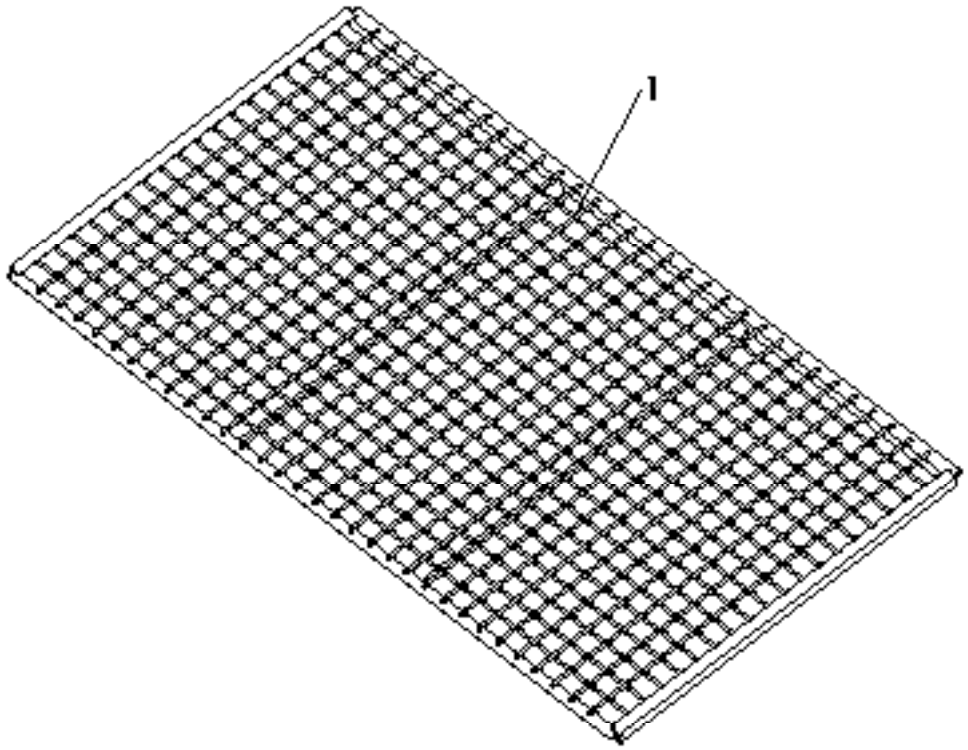

Note: Standard height, engine/single hydraulic drive spinner shown.

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| | 303343 | 303344 | Spinner – Assy Flip-Up, Eng. & Single Hyd. Drive | |
| | * 303341 | 303342 | Spinner – Assy Flip-Up, Dual Hydraulic Drive | |

## SPINNER HOPPER - FLIP UP CONTINUED

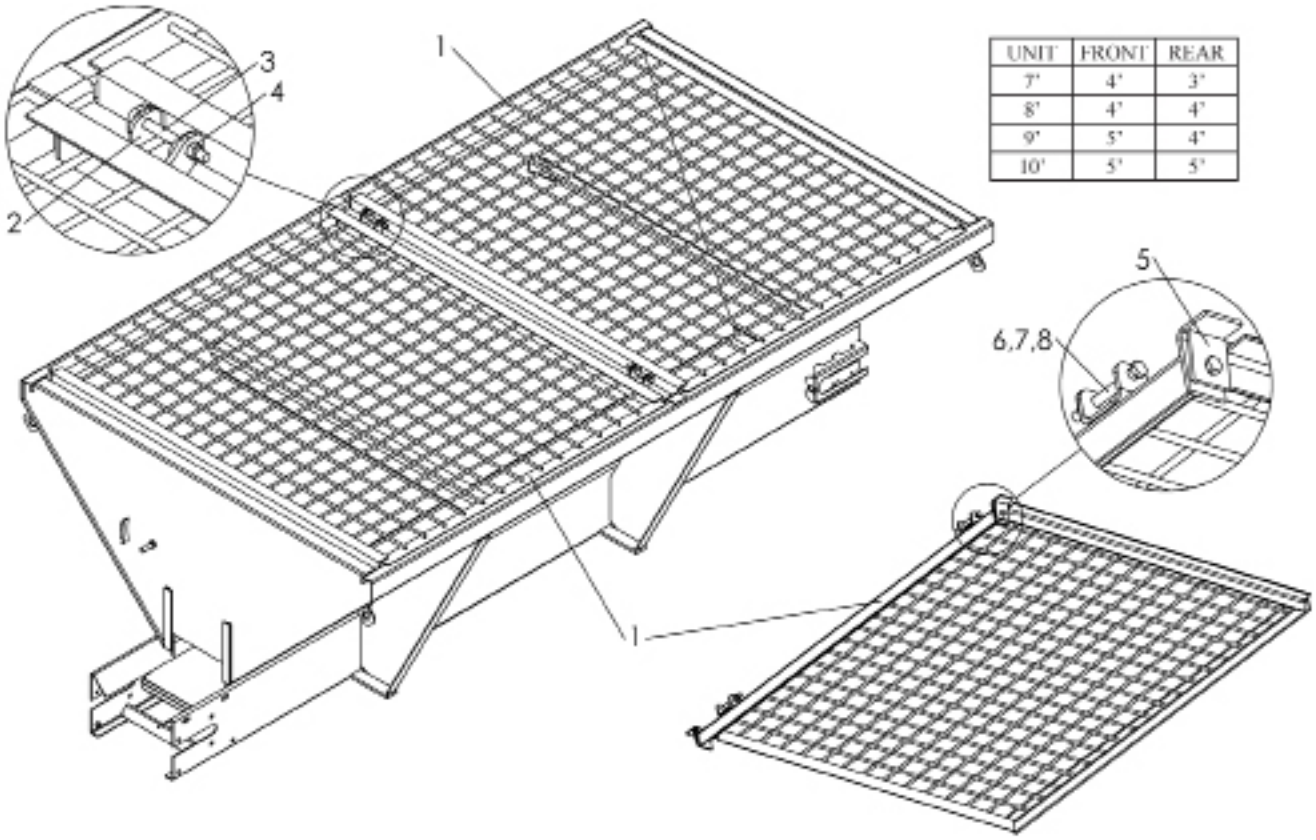
| | | | | |
|---|---|---|---|---|
| | * 303345 | 303346 | Spinner – Assy Flip-Up 12” Ext., Engine & Single Hydraulic Drive | |
| | * 304753 | * 304754 | Spinner – Assy Flip-Up 12” Ext., Dual Hydraulic Drive | |
| | * 303388 | 303389 | Hardware – Kit Spinner, Includes 24 (1) & 26–30 | |
| 1 | 302976 | 302976 | Shaft – Wldmt Flip-Up | 1 |
| 2 | 26816 | 26816 | Bearing – Pillow Block | AR |
| 3 | 6134 | 6134 | Key – Square 3/16 x 1-1/2 | 1 |
| 4 | 20735 | 20735 | Screw – Set 1/4-20 x 1/4 | 2 |
| 5 | 23742 | 23742 | Sprocket – 24T, Engine & Single Hyd. | 1 |
| | * 11431-X1 | 11431-X1 | Coupling – Motor, Dual Hydraulic | 1 |
| 6 | 303333 | 303334 | Panel – Wldmt Wrap | 1 |
| 7 | 303353 | 303354 | Hopper – Wldmt Flip-Up | 1 |
| | * 303355 | 303356 | Hopper – Wldmt Flip-Up, 12” Ext. | 1 |
| 8 | 79641 | 79643 | Baffle – Wldmt Rear | 1 |
| 9 | 79632 | 79634 | Baffle – Wldmt Side | 2 |
| 10 | 79650 | 79651 | Rod – Control Side | 4 |
| 11 | 303331 | 303332 | Rod – Control Rear | 1 |
| 12 | 90555 | 90559 | Baffle – Wldmt Inner LH | 1 |
| 13 | * 90554 | 90558 | Baffle – Wldmt Inner RH | 1 |
| 14 | 302986 | 302986 | Shaft – Wldmt Spinner | 1 |
| | * 302990 | 302990 | Shaft – Wldmt Spinner, 12” Ext. | 1 |
| 15 | 79290 | 79290 | Disc – Wldmt | 1 |
| 16 | 6299 | 6299 | Pin – Clevis 1/4 x 1-1/2 | 1 |
| 17 | 20811 | 20811 | Pin – Cotter 3/32 x 3/4 | 1 |
| 18 | 20319 | 36409 | Bolt – Carriage 3/8 x 1-1/4 | AR |
| 19 | 20693 | 36425 | Washer – Flat 3/8 | AR |
| 20 | 20712 | 36420 | Washer – Lock 3/8 | AR |
| 21 | 20644 | 36414 | Nut – Hex 3/8 | AR |
| 22 | 71066 | 79654 | Pin – Clevis 5/16 x 2-1/2 | 6 |
| 23 | 20810 | 76822 | Pin – Cotter 3/32 x 1/2 | 11 |
| 24 | 40562 | 41779 | Pin – Hair 1-7/16 x .073 | 8 |
| 25 | 302970 | 302970 | Rod – Spinner Flip-Up | 2 |
| 26 | 303048 | 303048 | Rod – Hanger Flip-up | 1 |
| 27 | * 20067 | 36398 | Cap Screw – 3/8 x 1 | 6 |
| 28 | * 20693 | 36425 | Washer – Flat 3/8 | 6 |
| 29 | * 20712 | 36420 | Washer – Lock 3/8 | 6 |
| 30 | * 20644 | 36414 | Nut – Hex 3/8 | 6 |

* - Not Shown




| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 79287 | Screen – 7’ HD Wldmt | 1 |
| | 79286 | Screen – 8’ HD Wldmt | 1 |
| | 79286-X1 | Screen – 9’ HD Wldmt | 1 |
| | 99080 | Screen – 10’ HD Wldmt | 1 |
| | * 98298 | Screen – 9’ Flip-up Wldmt 80+0 | 2 |
| | * 97394 | Screen – 10’ Flip-up Wldmt 80+0 | 2 |

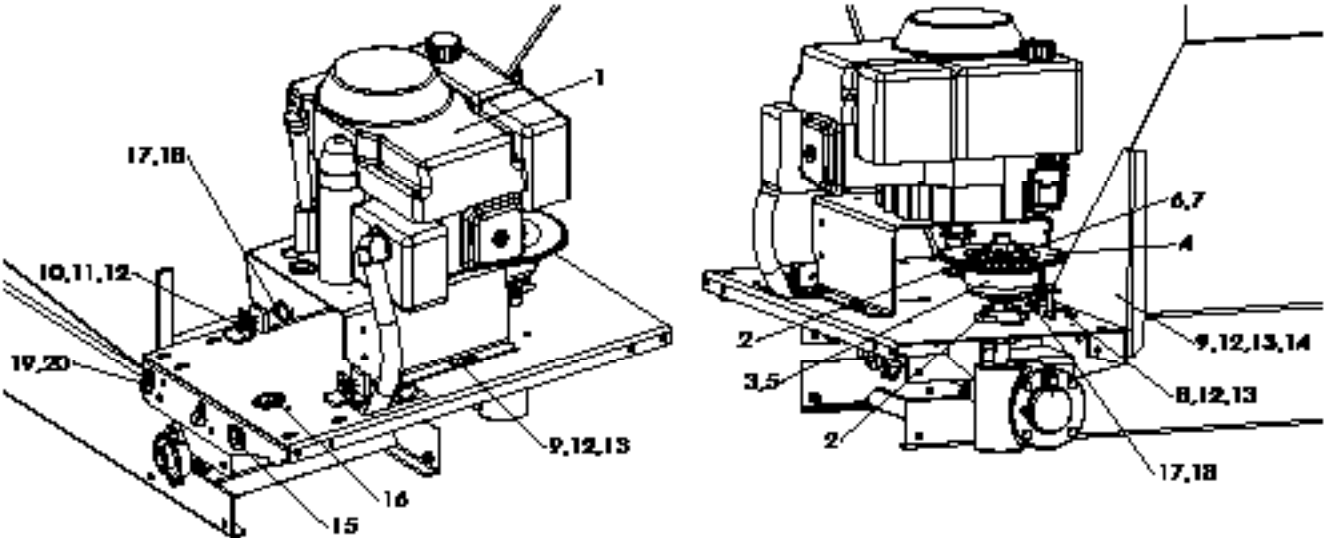
* - Not Shown




| UNIT | FRONT | REAR |
|---|---|---|
| 7' | 4' | 3' |
| 8' | 4' | 4' |
| 9' | 5' | 4' |
| 10' | 5' | 5' |

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| | 303262 | Hardware – Kit, Includes 3-8 | |
| 1 | 303328 | Screen – Wldmt 3’ | AR |
| | 303329 | Screen – Wldmt 4’ | AR |
| | 303330 | Screen – Wldmt 5’ | AR |
| 2 | 303326 | Pivot – Wldmt | 1 |
| 3 | 20077 | Cap Screw – 3/8-16 x 3-1/2 | 2 |
| 4 | 20678 | Nut – Lock 3/8-16 | 2 |
| 5 | 303392 | Clamp – Screen | 2 |
| 6 | 20068 | Cap Screw – 3/8-16 x 1-1/4 | 2 |
| 7 | 20712 | Washer – Lock 3/8 | 2 |
| 8 | 20644 | Nut – Hex 3/8 | 2 |

AR - As Required




Note: Honda engine shown.

# ENGINE DRIVE WITH ELECTRIC CLUTCH CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| | 303681 | 303682 | Engine – Assy 11 HP Honda | 1 |
| | 303679 | 303680 | Engine – Assy 10.5 HP B&S | 1 |
| 2 | 2696 | 2696 | Collar – Set 1” | 2 |
| 3 | 79695 | 79695 | Clutch – Electric | 1 |
| 4 | 11775 | 11775 | Sprocket – 52T | 1 |
| | 84291 | 84291 | Chain – Roller | |
| 5 | 82466 | 82466 | Key – 1/4 x 3/16 x 1-1/2 | 1 |
| 6 | 20033 | 20033 | Cap Screw – 5/16 x 5/8 | 3 |
| 7 | 20711 | 20711 | Washer – Lock 5/16 | 3 |
| 8 | 20074 | 36296 | Cap Screw – 3/8-16 x 2-3/4 | 1 |
| 9 | 20318 | 36408 | Bolt – Carriage 3/8-16 x 1 | 6 |
| 10 | 20070 | 20258 | Cap Screw – 3/8-16 x 1-3/4 | 2 |
| 11 | 20693 | 36425 | Washer – Flat 3/8 | 2 |
| 12 | 20712 | 36420 | Washer – Lock 3/8 | 11 |
| 13 | 20644 | 36414 | Nut – Hex 3/8-16 | 9 |
| 14 | 301290 | 301291 | Guard – Plate Engine | 1 |
| 15 | 24812 | 24812 | Grommet – Rubber | 1 |
| 16 | 34129 | 34129 | Grommet – Rubber | 1 |
| 17 | 99675 | 99675 | Base – Wire Tie | 4 |
| 18 | 99674 | 99674 | Tie – Wire | 4 |
| 19 | 36987 | 36987 | Clamp – Rubber Coated | 2 |
| 20 | 72071 | 72071 | Screw – Self Tapping | 2 |
| 21 | * 301322 | 301322 | Cable – Battery Ground | 1 |
| 22 | * 99716 | 99716 | Wire – Assy, Honda only | 1 |
| 23 | * 26990 | 26990 | Cable – Assy, B&S only | 1 |
| 24 | * 99673 | 99673 | Cable – Battery Honda Engine | 1 |
| | * 6205 | 6205 | Cable – Battery B&S Engine | 1 |
| 25 | 301922 | 301922 | Harness – Assy Honda Engine, See *Control Panel* parts list | 1 |
| | 301923 | 301923 | Harness – Assy B&S Engine, See *Control Panel* parts list | 1 |

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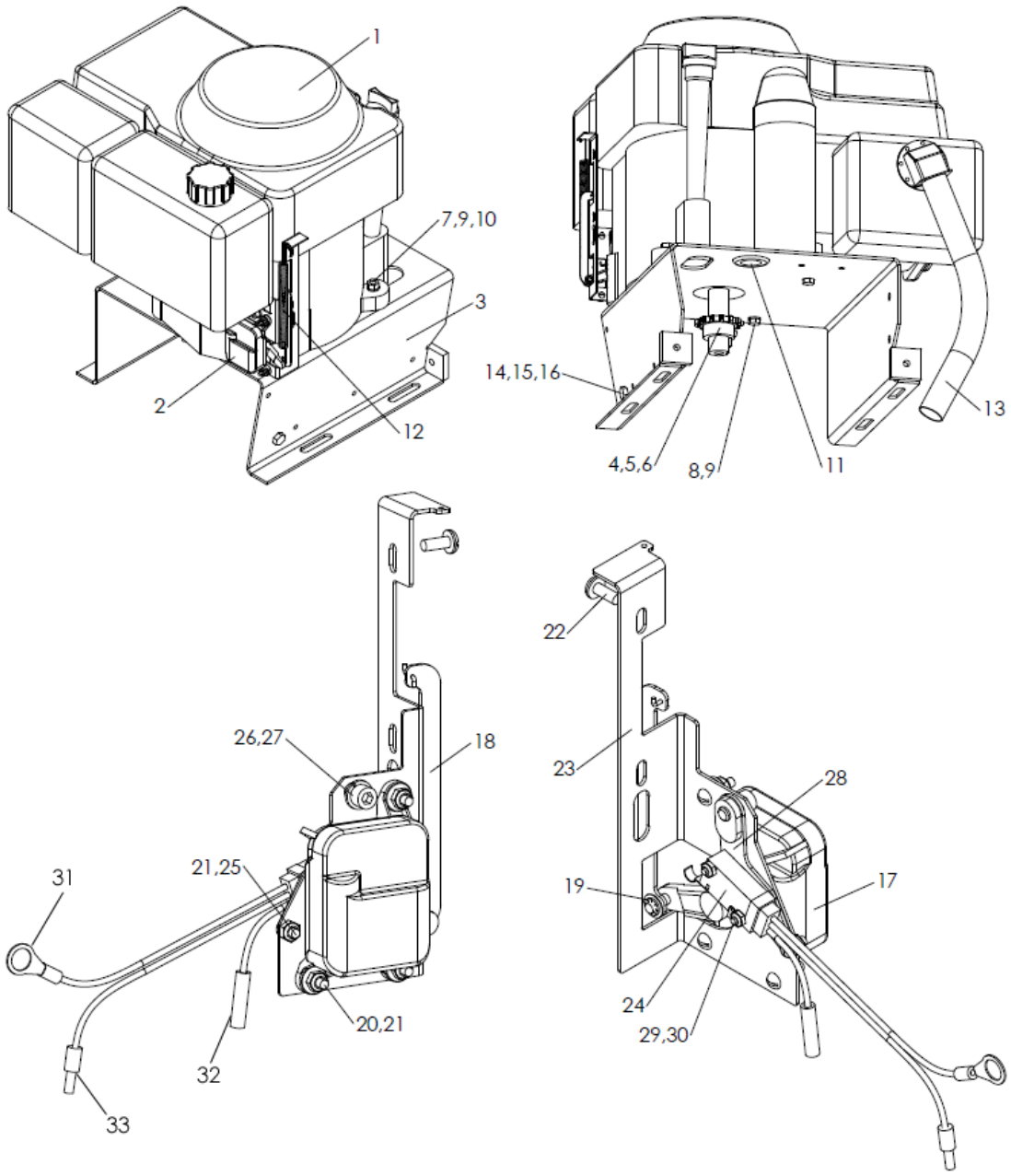
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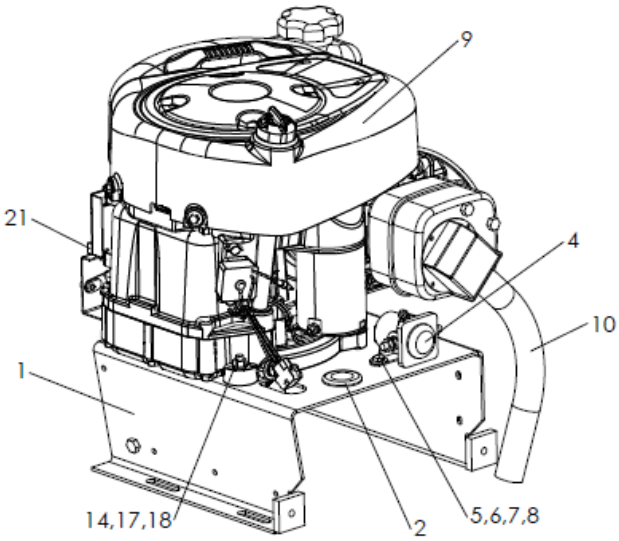
## ENGINE - 11 HP HONDA CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| | 303681 | 303682 | Engine – Assy Honda 11 HP | |
| 1 | 99407 | 99407 | Engine – Honda 11 HP | 1 |
| 2 | 301920 | 301920 | Throttle – Assy 11 HP, Includes 17-21,23-30 | 1 |
| 3 | 301238 | 301239 | Base – Wldmt Engine | 1 |
| 4 | 26688 | 26688 | Sprocket | 1 |
| 5 | 2212 | 2212 | Key – Square 1/4 x 1-1/2 | 1 |
| 6 | 20735 | 20735 | Screw – Set 1/4 x 1/4 | 2 |
| 7 | 20038 | 308056 | Cap Screw – 5/16-18 x 1-1/2 | 2 |
| 8 | 221154 | 221154 | Cap Screw – 5/16-24 x 3/4 | 2 |
| 9 | 20711 | 36419 | Washer – Lock 5/16 | 2 |
| 10 | 20677 | 42221 | Nut – Hex Lock 5/16-18 | 2 |
| 11 | 24812 | 24812 | Grommet – Rubber | 1 |
| 12 | 96243 | 96243 | Spring – Choke | 1 |
| 13 | 303398 | 303398 | Exhaust – Wldmt Honda | 1 |
| 14 | 20068 | 36399 | Cap Screw – 3/8 x 1-1/4 | 1 |
| 15 | 20712 | 36420 | Washer – Lock 3/8 | 1 |
| 16 | 20644 | 36414 | Nut – Hex 3/8 | 1 |
| 17 | 47444 | 47444 | Control – Electric Throttle | 1 |
| 18 | 99574 | 99574 | Linkage – Throttle | 1 |
| 19 | 99679 | 99679 | Retainer – Push | 1 |
| 20 | 301932 | 301932 | Screw – Machine #8-32 x 5/8 | 3 |
| 21 | 45168 | 45168 | Nut – Lock #8-32 | 4 |
| 22 | 99678 | 99678 | Screw – Pan Head M5 x 12 | 1 |
| 23 | 301915 | 301915 | Bracket – Throttle | 1 |
| 24 | 301913 | 301913 | Switch – Snap Action | 1 |
| 25 | 20568 | 20568 | Screw – Machine #8-32 x 3/8 | 1 |
| 26 | 99506 | 99506 | Screw – 1/4-20 x 3/8 Hex Head | 1 |
| 27 | 20710 | 20710 | Washer – Lock 1/4 | 1 |
| 28 | 301918 | 301918 | Plate – Wldmt Switch | 1 |
| 29 | 301930 | 301930 | Screw – Machine #4-40 x 5/8 | 2 |
| 30 | 301931 | 301931 | Nut – Lock #4-40 | 2 |
| 31 | 31572 | 31572 | Terminal - Ring | 1 |
| 32 | 6549 | 6549 | Connector - Butt Splice | 1 |
| 33 | 6488 | 6488 | Connector - Wire Male | 1 |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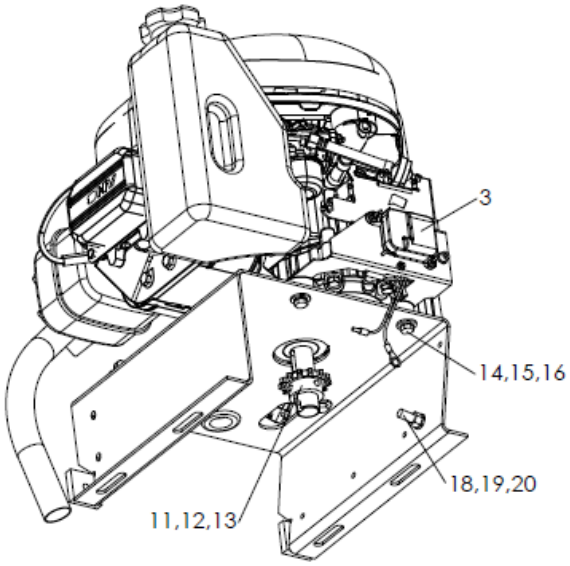
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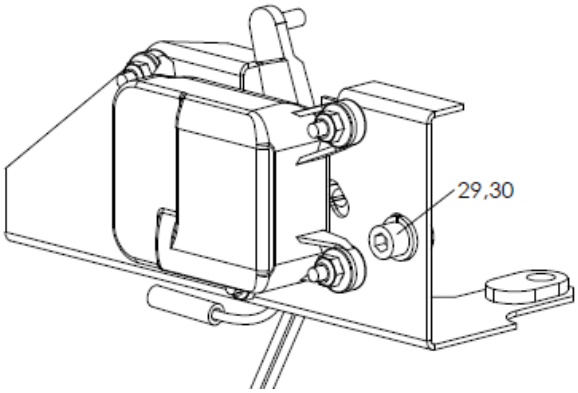
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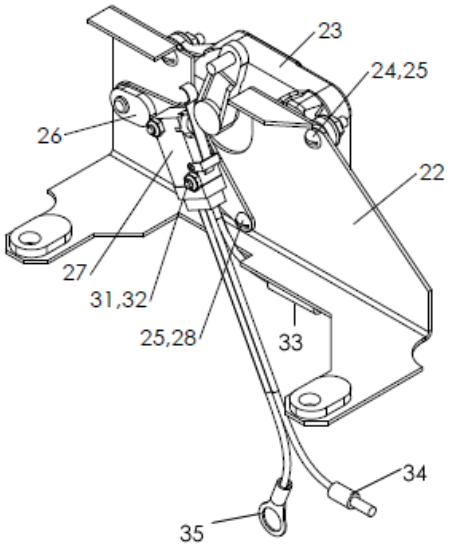
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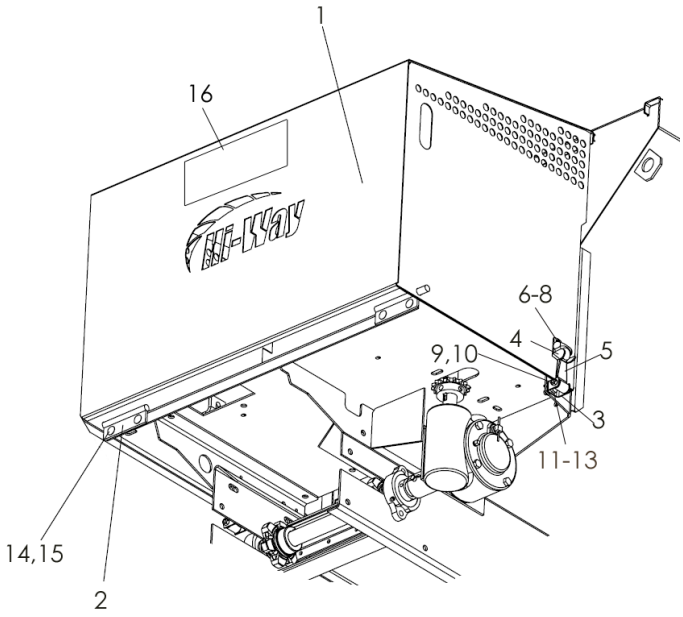
## ENGINE - 10.5 HP BRIGGS & STRATTON CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| | 303679 | 303680 | Engine – Assy Briggs & Stratton 10.5 HP | |
| 1 | 301238 | 301239 | Base – Wldmt Engine | 1 |
| 2 | 24812 | 24812 | Grommet – Rubber | 1 |
| 3 | 301921 | 301921 | Throttle – Assy 10.5 HP, Includes 22-35 | 1 |
| 4 | 18101 | 18101 | Switch – Solenoid Magnetic | 1 |
| 5 | 20002 | 36393 | Cap Screw – 1/4 x 5/8 | 2 |
| 6 | 20691 | 36423 | Washer – Flat 1/4 | 2 |
| 7 | 20710 | 36418 | Washer – Lock 1/4 | 2 |
| 8 | 20642 | 36412 | Nut – Hex 1/4 | 2 |
| 9 | 308916 | 308916 | Engine – B&S 10.5 HP | 1 |
| 10 | 303399 | 303399 | Exhaust – Wldmt B & S | 1 |
| 11 | 26688 | 26688 | Sprocket | 1 |
| 12 | 2212 | 2212 | Key – Square 1/4 x 1-1/2 | 1 |
| 13 | 20735 | 20735 | Screw – Set 1/4 x 1/4 | 2 |
| 14 | 20038 | 36397 | Cap Screw – 5/16 x 1-1/2 | 4 |
| 15 | 20692 | 36424 | Washer – Flat 5/16 | 4 |
| 16 | 20711 | 36419 | Washer – Lock 5/16 | 4 |
| 17 | 20643 | 36413 | Nut – Hex 5/16 | 2 |
| 18 | 20068 | 36399 | Cap Screw – 3/8 x 1-1/4 | 1 |
| 19 | 20712 | 36420 | Washer – Lock 3/8 | 1 |
| 20 | 20644 | 36414 | Nut – Hex 3/8 | 1 |
| 21 | 47447 | 47447 | Block – Throttle | 1 |
| 22 | 301917 | 301917 | Bracket – Wldmt Throttle | 1 |
| 23 | 47444 | 47444 | Control – Electric Throttle | 1 |
| 24 | 301932 | 301932 | Screw – Machine #8-32 x 5/8 | 3 |
| 25 | 45168 | 45168 | Nut – Lock #8-32 | 4 |
| 26 | 301919 | 301919 | Plate – Wldmt Switch | 1 |
| 27 | 301913 | 301913 | Switch – Snap Action | 1 |
| 28 | 20568 | 20568 | Screw – Machine - #8-32 x 3/8 | 1 |
| 29 | 99506 | 99506 | Screw – 1/4-20 x 3/8 | 1 |
| 30 | 20710 | 20710 | Washer – Lock 1/4 | 1 |
| 31 | 301930 | 301930 | Screw – Machine #4-40 x 5/8 | 2 |
| 32 | 301931 | 301931 | Nut – Lock #4-40 | 2 |
| 33 | 6549 | 6549 | Connector - Butt Splice | 1 |
| 34 | 6488 | 6488 | Connector - Wire Male | 1 |
| 35 | 31572 | 31572 | Terminal - Ring | 1 |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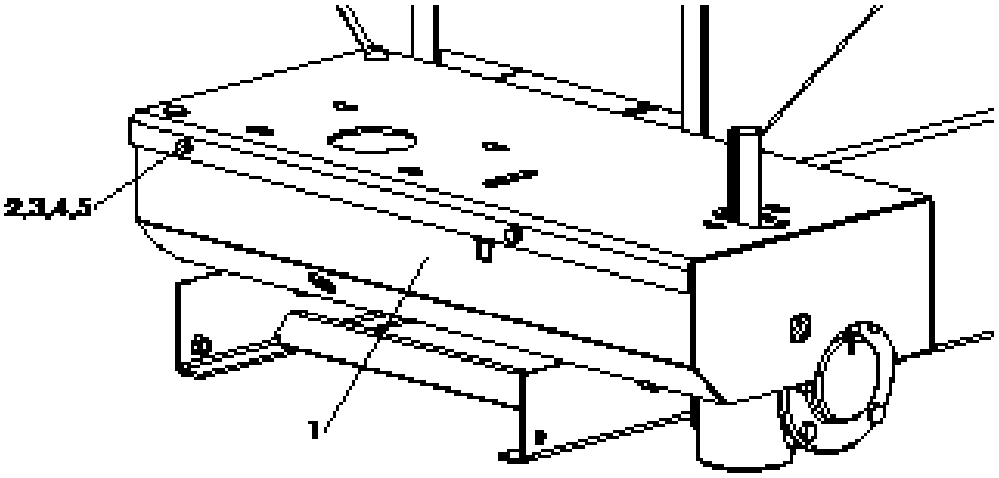
## ENGINE HOOD CONTINUED

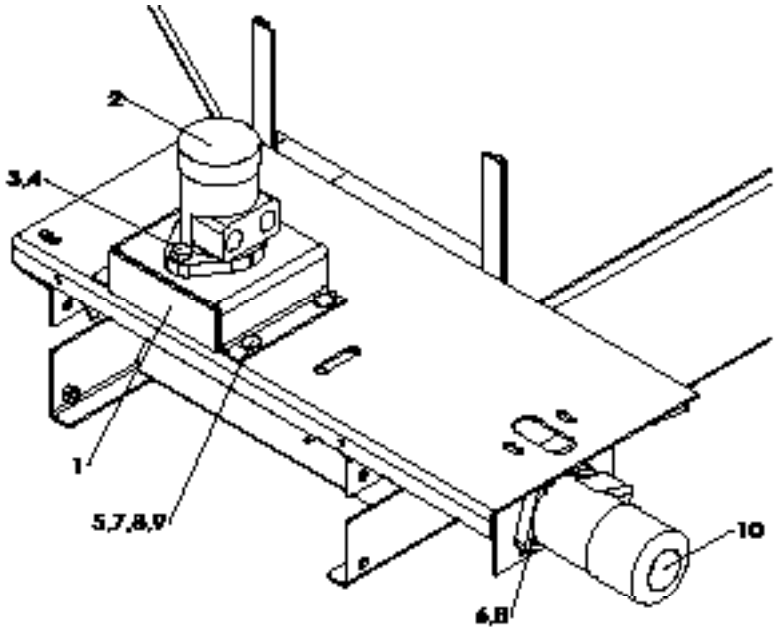
| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 301495 | 301496 | Hood – Wldmt | 1 |
| 2 | 301304 | 301305 | Pivot – Wldmt | 2 |
| 3 | 73344 | 73344 | Bracket – Anchor | 2 |
| 4 | 57086 | 57086 | Bracket – Hood | 2 |
| 5 | 73343 | 73343 | Hook – Rubber | 2 |
| 6 | 20570 | 44452 | Cap Screw - #10 x 1/2 | 4 |
| 7 | 20709 | 44451 | Washer – Lock #10 | 4 |
| 8 | 20641 | 47295 | Nut – Hex #10 | 4 |
| 9 | 20007 | 42448 | Cap Screw – 1/4 x 1-1/2 | 2 |
| 10 | 20676 | 42034 | Nut – Lock 1/4 | 2 |
| 11 | 20033 | 56858 | Cap Screw – 5/16 x 3/4 | 2 |
| 12 | 20711 | 36419 | Washer – Lock 5/16 | 2 |
| 13 | 20643 | 36413 | Nut – Hex 5/16 | 2 |
| 14 | 20290 | 96880 | Bolt – Carriage 5/16 x 3/4 | 4 |
| 15 | 20677 | 42221 | Nut – Lock 5/16 | 4 |
| 16 | 79692 | 79692 | Decal - Warning Moving Part Hazard | 1 |
| 17 | *55224 | 55224 | Decal – Danger Guard Missing (Engine Top) | 1 |
| 18 | *306818 | 306818 | Seal - Rubber | AR |

* - Not Shown AR - As Required

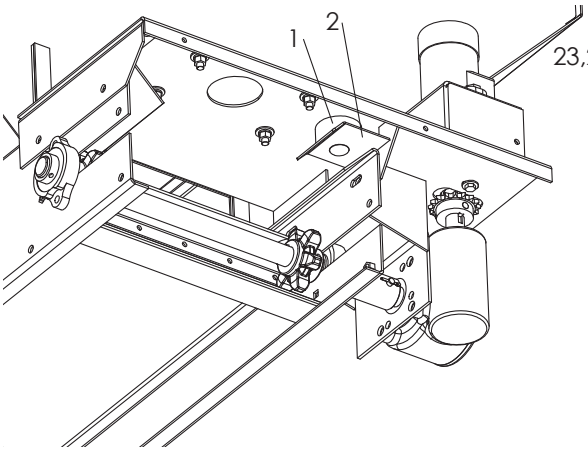



| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 301259 | 301261 | Guard – Wldmt Engine | |
| | 301263 | 301265 | Guard – Wldmt Hydraulic | 1 |
| 2 | 20003 | 36393 | Cap Screw – 1/4 x 3/4 | 3 |
| 3 | 20691 | 36423 | Washer – Flat 1/4 | 3 |
| 4 | 20710 | 36418 | Washer – Lock 1/4 | 3 |
| 5 | 20642 | 36412 | Nut – Hex 1/4 | 3 |
| 6 | * 79566 | 79566 | Chain – Roller 41-1/2” | 1 |

* - Not Shown




| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 84729 | 84586 | Mount – Wldmt Motor | 1 |
| 2 | 37339 | 37339 | Motor – Hydraulic | 1 |
| | 37352 | 37352 | Seal Kit – Motor | 1 |
| | 37350 | 37350 | Service Kit – Motor | 1 |
| 3 | 20129 | 36539 | Cap Screw – 1/2 x 1-1/2 | 2 |
| 4 | 20680 | 39016 | Nut – Hex 1/2 | 2 |
| 5 | 20318 | 36408 | Bolt – Carriage 3/8 x 1 | 4 |
| 6 | 20065 | 36293 | Cap Screw – 3/8 x 3/4 | 4 |
| 7 | 20693 | 36425 | Washer – Flat 3/8 | 4 |
| 8 | 20712 | 36420 | Washer – Lock 3/8 | 8 |
| 9 | 20644 | 36414 | Nut – Hex 3/8 | 4 |
| 10 | 37338 | 37338 | Motor – Hydraulic | 1 |
| | 39137 | 39137 | Seal Kit – Motor | 1 |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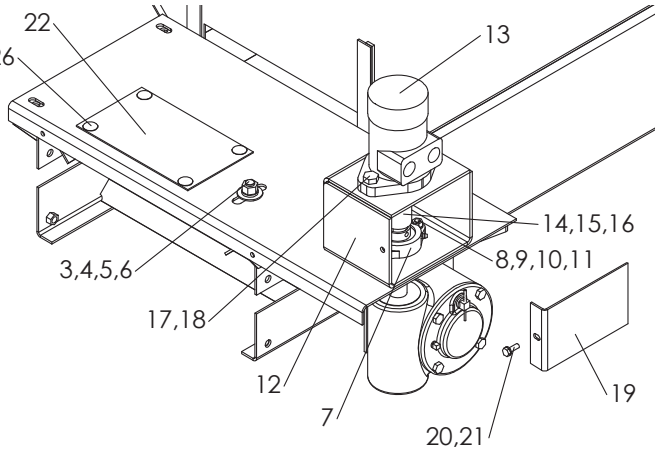
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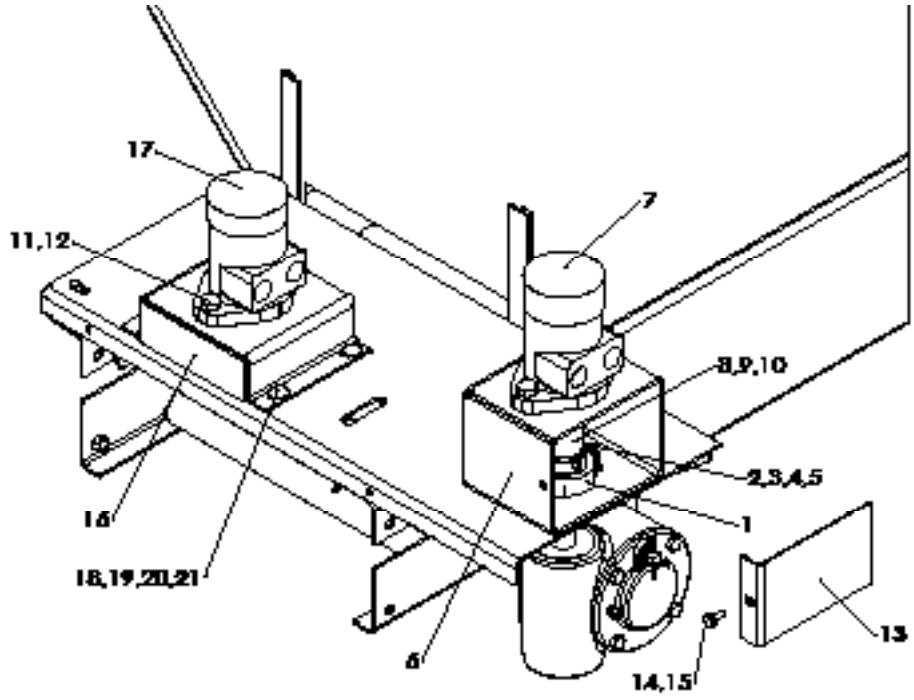
## SINGLE HYDRAULIC DRIVE CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 81954 | 81954 | Block – Tightener | 1 |
| 2 | 81955 | 81955 | Plate – Chain Guide | 1 |
| 3 | 20435 | 20435 | Bolt – Carriage 1/2 x 2-1/4 | 1 |
| 4 | 20695 | 36426 | Washer – Flat 1/2 | 1 |
| 5 | 20714 | 36422 | Washer – Lock 1/2 | 1 |
| 6 | 20646 | 36416 | Nut – Hex 1/2 | 1 |
| 7 | 22563 | 22563 | Bearing – 2-Bolt | 1 |
| 8 | 20037 | 36397 | Cap Screw – 5/16 x 1-1/4 | 2 |
| 9 | 20692 | 36424 | Washer – Flat 5/16 | 2 |
| 10 | 20711 | 36419 | Washer – Lock 5/16 | 2 |
| 11 | 20643 | 36413 | Nut – Hex 5/16 | 2 |
| 12 | 79876 | 79877 | Mount – Wldmt Motor | 1 |
| 13 | 79993 | 79993 | Motor – Hydraulic | 1 |
| | 39137 | 39137 | Seal Kit – Motor | 1 |
| 14 | 11431 | 11431 | Coupling – Motor | 1 |
| 15 | 2212 | 2212 | Key – Square 1/4 x 1-1/2 | 1 |
| 16 | 20735 | 20735 | Screw – Set 1/4-20 x 1/4 | 4 |
| 17 | 20129 | 36539 | Cap Screw – 1/2 x 1-1/2 | 2 |
| 18 | 20680 | 39016 | Nut – Hex 1/2 | 2 |
| 19 | 79870 | 79871 | Guard – Panel | 1 |
| 20 | 20003 | 36393 | Cap Screw – 1/4 x 3/4 | 1 |
| 21 | 20710 | 36418 | Washer – Lock 1/4 | 1 |
| 22 | 301288 | 301289 | Guard – Plate Hydraulic | 1 |
| 23 | 20318 | 36408 | Bolt – Carriage 3/8 x 1 | 4 |
| 24 | 20693 | 36425 | Washer – Flat 3/8 | 4 |
| 25 | 20712 | 36420 | Washer – Lock 3/8 | 4 |
| 26 | 20644 | 36414 | Nut – Hex 3/8 | 4 |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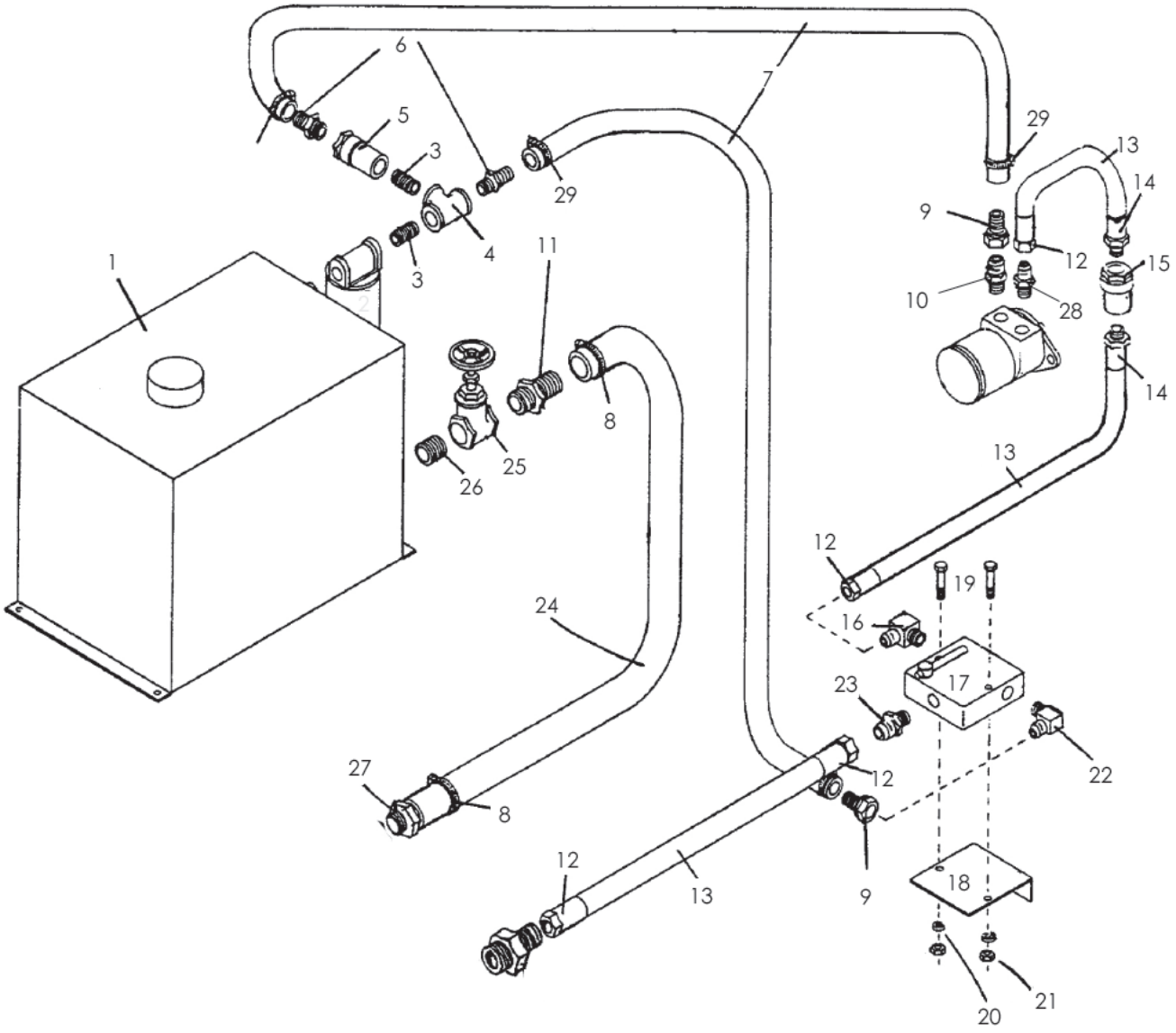
## DUAL HYDRAULIC DRIVE CONTINUED

| ITEM | PART NO. | | DESCRIPTION | QTY |
|---|---|---|---|---|
| | CS | SS | | |
| 1 | 22563 | 22563 | Bearing – 2-Bolt | 1 |
| 2 | 20037 | 36397 | Cap Screw – 5/16 x 1-1/4 | 2 |
| 3 | 20692 | 36424 | Washer – Flat 5/16 | 2 |
| 4 | 20711 | 36419 | Washer – Lock 5/16 | 2 |
| 5 | 20643 | 36413 | Nut – Hex 5/16 | 2 |
| 6 | 79876 | 79877 | Mount – Wldmt Motor | 1 |
| 7 | 79993 | 79993 | Motor – Hydraulic | 1 |
| | 39137 | 39137 | Seal Kit – Motor | 1 |
| 8 | 11431 | 11431 | Coupling – Motor | 1 |
| 9 | 2212 | 2212 | Key – Square 1/4 x 1-1/2 | 1 |
| 10 | 20735 | 20735 | Screw – Set 1/4-20 x 1/4 | 4 |
| 11 | 20129 | 36539 | Cap Screw – 1/2 x 1-1/2 | 2 |
| 12 | 20680 | 39016 | Nut – Hex 1/2 | 2 |
| 13 | 79870 | 79871 | Guard – Panel | 1 |
| 14 | 20003 | 36393 | Cap Screw – 1/4 x 3/4 | 1 |
| 15 | 20710 | 36418 | Washer – Lock 1/4 | 1 |
| 16 | 84729 | 84586 | Mount - Wldmt Motor | 1 |
| 17 | 37339 | 37339 | Motor - Hydraulic | 1 |
| | 39137 | 39137 | Seal - Kit Motor | 1 |
| 18 | 20318 | 36408 | Bolt – Carriage 3/8 x 1 | 4 |
| 19 | 20693 | 36425 | Washer – Flat 3/8 | 4 |
| 20 | 20712 | 36420 | Washer – Lock 3/8 | 4 |
| 21 | 20644 | 36414 | Nut – Hex 3/8 | 4 |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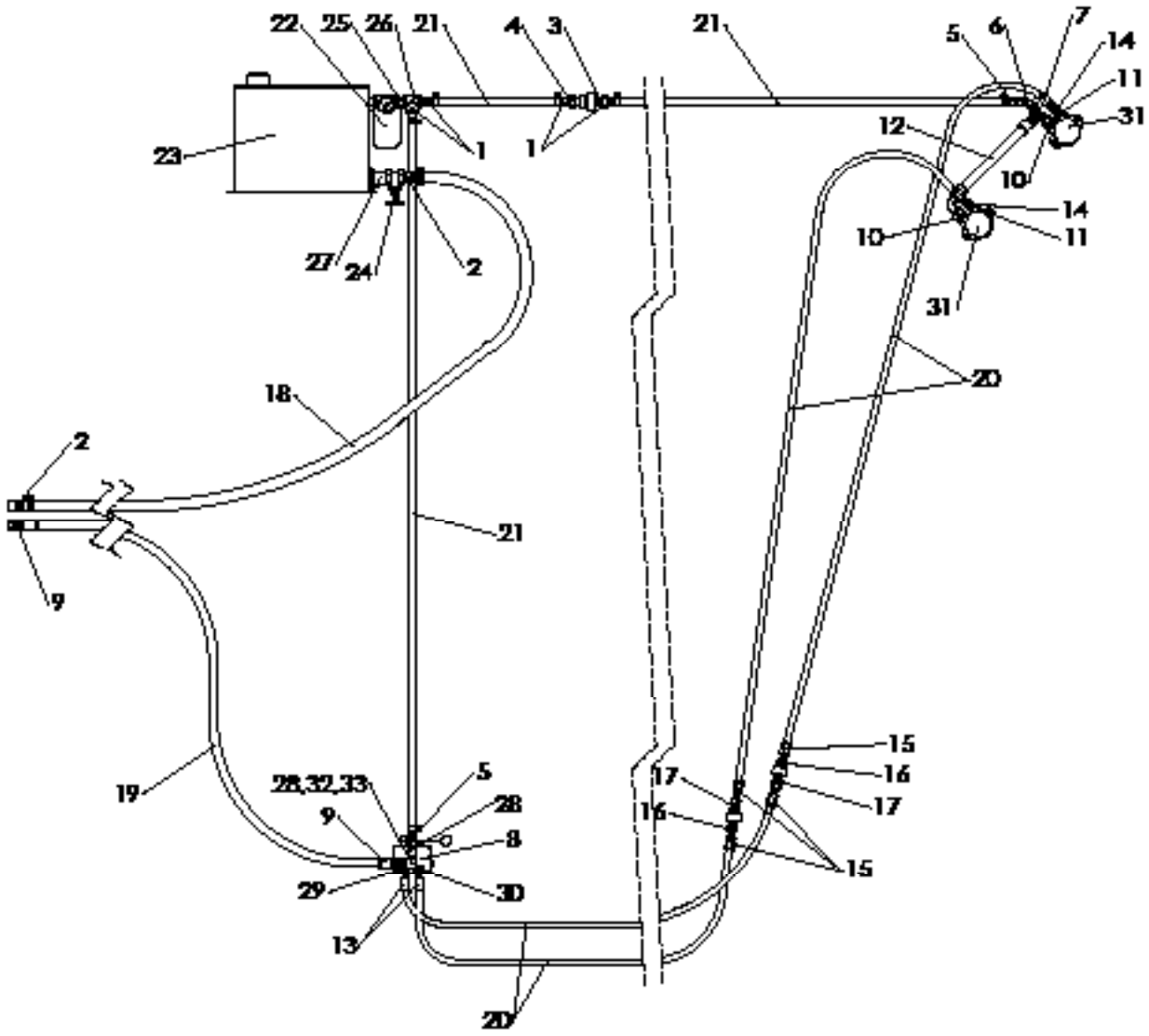
## HYDRAULICS - SINGLE CONTINUED

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 11436 | Tank – Hydraulic Assy | 1 |
| | * 87349 | Cap – Filler Assy | 1 |
| | * 6033 | Plug – Pipe | 1 |
| 2 | 30743 | Filter – Hydraulic | 1 |
| 3 | 6026 | Nipple – Close | 2 |
| 4 | 6020 | Tee | 1 |
| 5 | 39905 | Disconnect – Quick Male | 1 |
| | 39906 | Disconnect – Quick Female | 1 |
| 6 | 22425 | Nipple – Hose | 2 |
| 7 | 16529-300 | Hose – Return | 1 |
| 8 | 6335 | Clamp – Hose | 4 |
| 9 | 11424 | Nipple – Hose | 2 |
| 10 | 29753 | Adapter | 1 |
| 11 | 16582 | Nipple – Hose | 1 |
| 12 | 31598 | End – Hose Reusable | 4 |
| 13 | 56453-360 | Hose | 1 |
| 14 | 31599 | End – Hose Reusable | 2 |
| 15 | 40008 | Disconnect – Quick Male | 1 |
| | 40009 | Disconnect – Quick Female | 1 |
| 16 | 30759 | Adapter | 1 |
| 17 | 30745 | Valve – Control | 1 |
| 18 | 30862 | Bracket – Valve Mounting | 1 |
| 19 | 20011 | Cap Screw - 1/4 x 2 | 2 |
| 20 | 20710 | Washer – Lock 1/4 | 2 |
| 21 | 20642 | Nut – Hex 1/4 | 2 |
| 22 | 34722 | Adapter | 1 |
| 23 | 29767 | Adapter | 1 |
| 24 | 23184-240 | Hose – Suction | 1 |
| 25 | 22155 | Valve – Gate | 1 |
| 26 | 34777 | Nipple | 1 |
| 27 | 16572 | Nipple – Hose | 1 |
| 28 | 29771 | Adapter | 1 |
| 29 | 22381 | Clamp - Hose | 2 |

* - Not shown

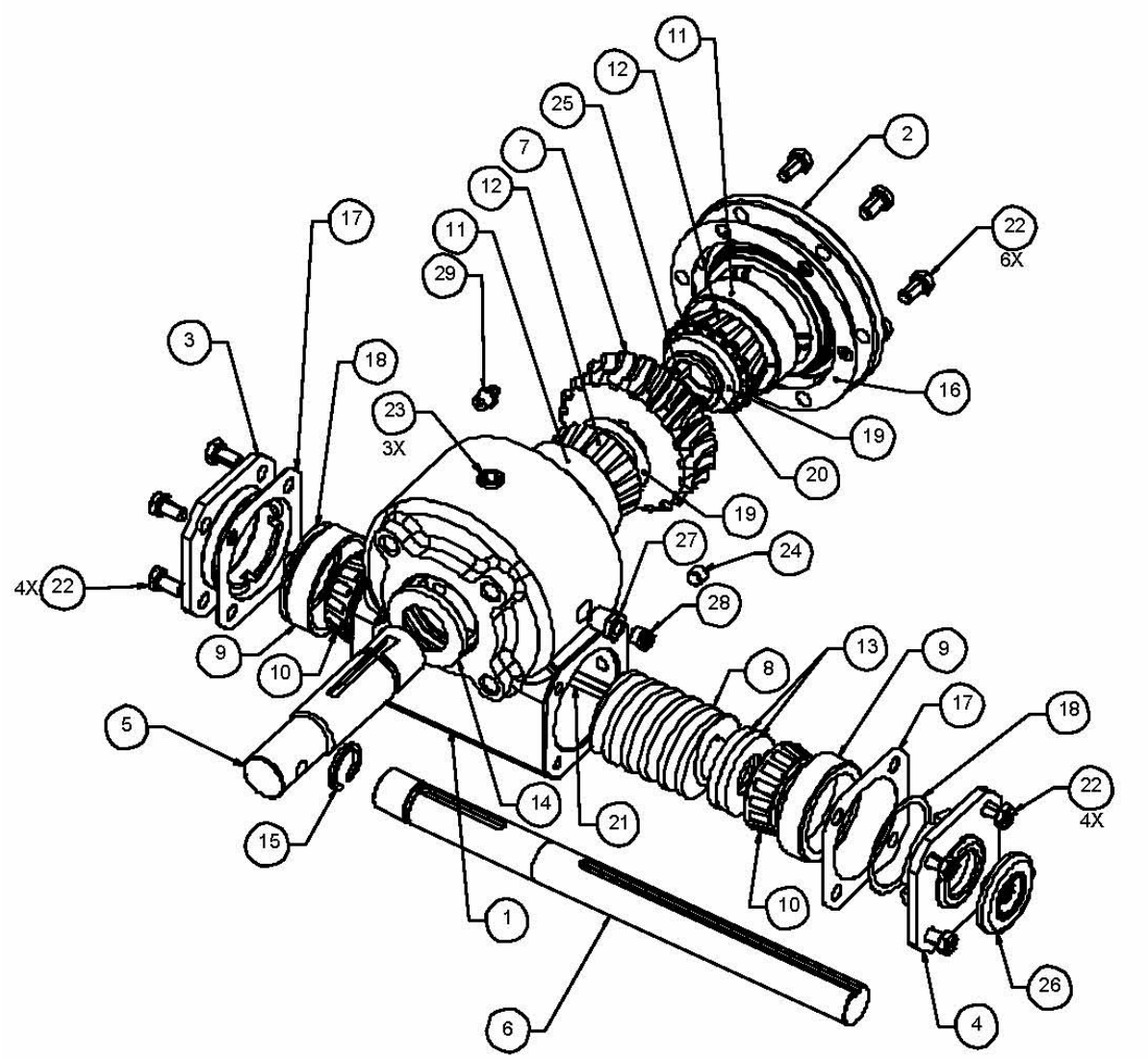



| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 22425 | End – Hose | 4 |
| 2 | 16582 | End – Hose | 2 |
| 3 | 39905 | Disconnect – Quick Male | 1 |
| 4 | 39906 | Disconnect – Quick Female | 1 |
| 5 | 11424 | End – Hose | 2 |
| 6 | 29782 | Adapter – Elbow 45° | 1 |
| 7 | 29781 | Tee – Swivel Nut | 1 |
| 8 | 310650 | Valve – Control | 1 |
| 9 | 56508 | Fitting – Hose Reusable | 2 |
| 10 | 29753 | Adapter – Connector | 2 |

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 11 | 29771 | Adapter – Connector | 2 |
| 12 | 99384 | Hose Assy | 1 |
| 13 | 56485 | End – Hose 90° | 2 |
| 14 | 31598 | Fitting – Hose Reusable | 2 |
| 15 | 31599 | Fitting – Hose Reusable | 4 |
| 16 | 40008 | Disconnect – Quick Male | 2 |
| 17 | 40009 | Disconnect – Quick Female | 2 |
| 18 | 23184-144 | Hose | AR |
| | * 6335 | Clamp – Hose | AR |
| 19 | 56459-120 | Hose | AR |
| 20 | 56453-416 | Hose – Cut to Length | AR |
| 21 | 16529-336 | Hose | AR |
| | * 22381 | Clamp – Hose | AR |
| 22 | 30743 | Filter – Oil | 1 |
| | 39934 | Filter | 1 |
| | 43534 | Indicator – Service | 1 |
| 23 | 11436 | Tank – Hydraulic | 1 |
| | * 87349 | Cap – Filler | 1 |
| | * 6033 | Plug – Pipe | 1 |
| 24 | 22155 | Valve – Gate | 1 |
| 25 | 6026 | Nipple – Pipe | 1 |
| 26 | 6020 | Tee – Pipe | 1 |
| 27 | 34777 | Nipple – Pipe | 1 |
| 28 | 29764 | Adapter – Elbow 90° | 2 |
| 29 | 29808 | Adapter – Connector | 1 |
| 30 | 29767 | Adapter – Connector | 1 |
| 31 | | Motor – Hydraulic, See Dual Hydraulic Drive | 2 |
| 32 | 16362 | Nipple – Pipe | 1 |
| 33 | 16276 | Coupling | 1 |

* - Not Shown AR - As Required

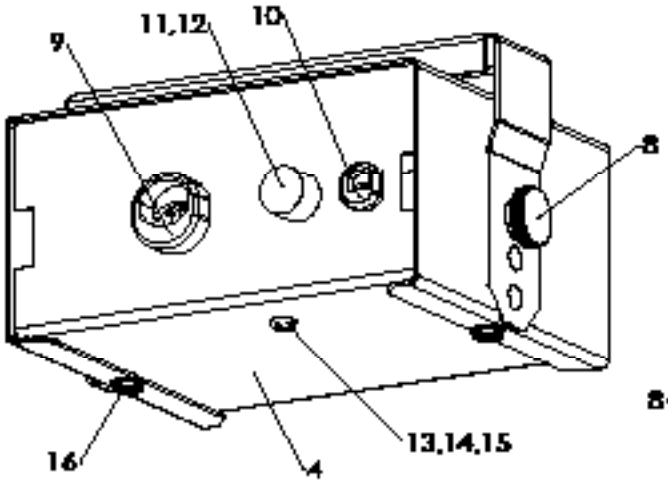
# GEAR CASE - CONVEYOR



## GEAR CASE - CONVEYOR CONTINUED

| ITEM | PART NO. | | DESCRIPTION | | QTY |
|---|---|---|---|---|---|
| | 11428 | -- | Gear Case – Conveyor, Hydraulic Drive | | |
| | -- | 27118 | Gear Case – Conveyor, Engine Drive | | |
| 1 | 27118-SB | 27119 | Housing | | 1 |
| 2 | 27118-SC | 22824 | Cover | | 1 |
| 3 | 27118-SD | 22839 | End Cap | | AR |
| 4 | 27118-SE | 22832 | End cap, Thru | | 1 |
| 5 | 27118-SF | 27176 | Shaft, Output | | 1 |
| 6 | 27118-SG | 27175 | Shaft, Input | | 1 |
| | | 11429 | Shaft, Input, Hydraulic Drive | | |
| 7 | 27118-SH | 27172 | Gear, Wheel , LH | | 1 |
| | | 30742 | Screw - Set | | 1 |
| 8 | 27118-SI | 26809 | Gear, Worm, LH | | 1 |
| 9 | 27118-SJ | 24225 | Bearing, Input Cup | | 2 |
| 10 | 27118-SK | 24230 | Bearing, Input Cone | | 2 |
| 11 | 27118-SL | 24225 | Bearing, Output Cup | | 2 |
| 12 | 27118-SM | 27170 | Bearing, Output Cone | | 2 |
| 13 | 27118-SN | 27171 | Seal, Input | | 2 |
| 14 | 27118-SO | 27171 | Seal, Output | | 1 |
| 15 | 27118-SP | 6089 | Retaining Ring, Input | | 1 |
| 16 | 27118-SQ | 22834 | Gasket, Cover | | 1 |
| 17 | 27118-SR | 22834 | Gasket, Input | | 2 |
| 18 | 27118-SS | 19407 | Shim, Input | | AR |
| 19 | 27118-ST | 19407 | Shim, Output | | AR |
| 20 | 27118-SU | 22832 | Retaining Ring, Output | | 1 |
| 21 | 6136 | 24234 | Key, Input 1/4 x 1/4 x 2 | | 1 |
| 22 | 27118-SV | 20065 | Hex Cap Screw 5/16-18 x 5/8 | | AR |
| 23 | 6031 | -- | Plug, 3/8-18 NPT | | 3 |
| 24 | 21835 | -- | Plug, 1/8-27 NPT | | 1 |
| 25 | 27118-SW | 22798 | Key, Output 1/4 x 1/4 x 2 | | 1 |
| 26 | 27118-SX | 24232 | String, Guard | | 1 |
| 27 | 27465 | -- | Bushing, 3/8 x 1/8 | | 1 |
| 28 | 27118-SY | 42787 | 5-PSI Relief Plug | | 1 |
| 29 | 6069 | 6072 | Grease Zerk, 1/8-27 NPT | | 1 |
| 30 | 27118-SZ | -- | Oil, EP 85W140 | Ounces | 12oz |

AR - As Required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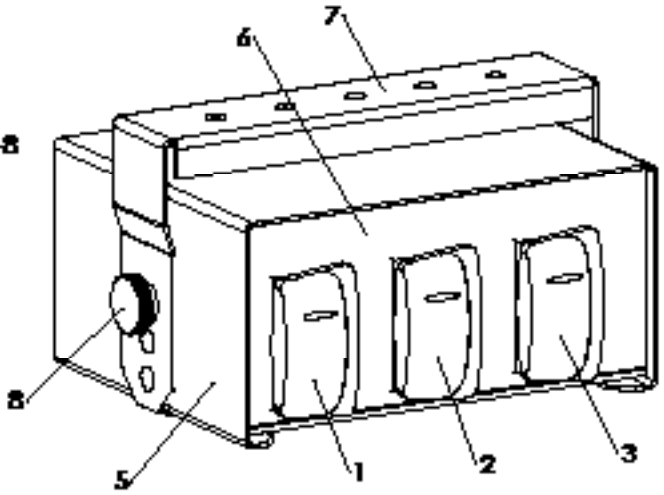
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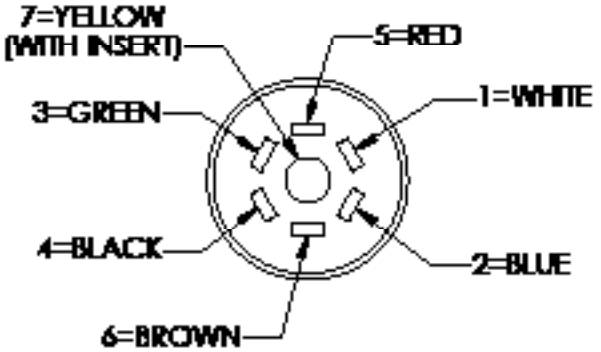
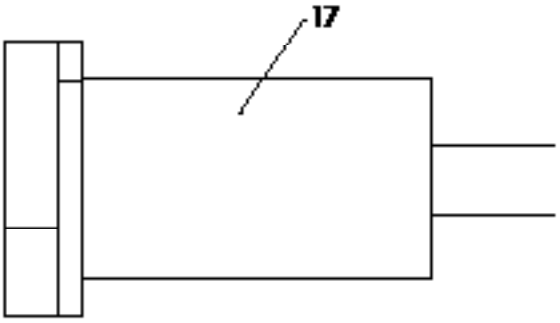

7=YELLOW
(WITH INSERT)
5=RED
3=GREEN
1=WHITE
4=BLACK
2=BLUE
6=BROWN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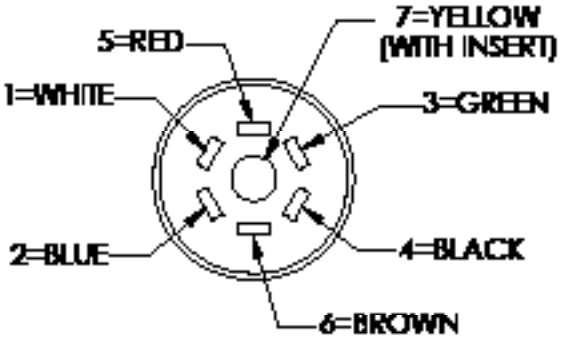
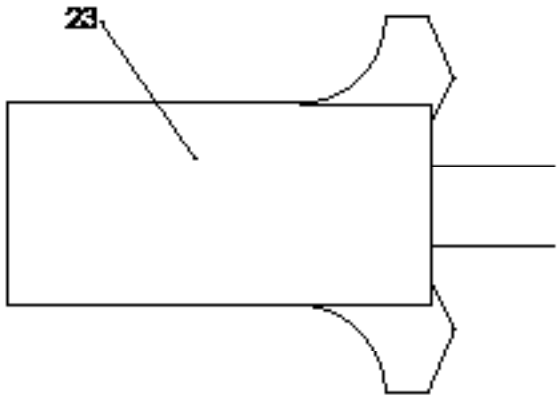

5=RED
7=YELLOW
(WITH INSERT)
1=WHITE
3=GREEN
2=BLUE
4=BLACK
6=BROWN

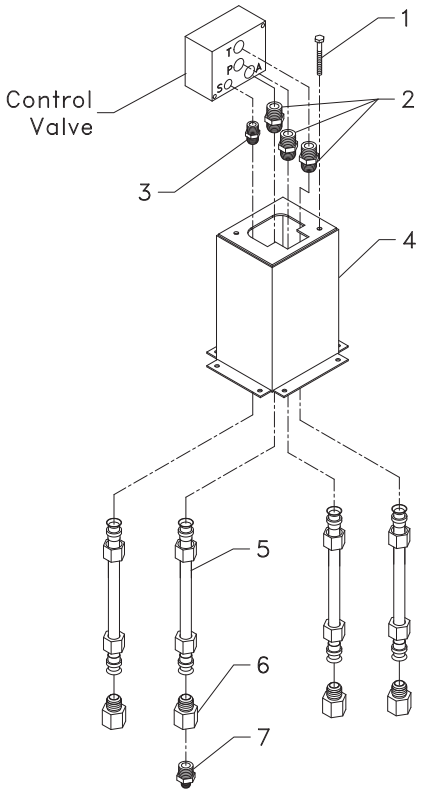

23

## CONTROL PANEL & CONNECTIONS CONTINUED

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| | 301929 | Control Panel – Rear with Choke Light, Includes 1-19 | |
| | * 99818 | Control Panel – Kit Plug Mounting, Includes 20-22 | |
| | * 303019 | Loom – Assy 12’ Extension w/ Choke Lt. | 1 |
| 1 | 99495 | Switch – Rocker Double Pole | 1 |
| 2 | 301933 | Switch – Rocker Double Pole | 1 |
| 3 | 99493 | Switch – Rocker | 1 |
| 4 | 303025 | Panel – Front | 1 |
| 5 | 303026 | Cover – Wldmt Panel | 1 |
| 6 | 303023 | Decal – Control Panel | 1 |
| 7 | 303028 | Bracket – Mount | 1 |
| 8 | 99507 | Knob Assy | 2 |
| 9 | 99490 | Bushing - .56 | 1 |
| 10 | 99491 | Bushing - .27 | 1 |
| 11 | 99492 | Holder – Fuse | 1 |
| 12 | 99676 | Fuse – 10 Amp | 1 |
| 13 | 20570 | Screw – Round Head | 1 |
| 14 | 99677 | Washer – Star | 1 |
| 15 | 20641 | Nut – Hex #10 | 2 |
| 16 | 87340 | Screw – Self Tapping | 2 |
| 17 | 301927 | Cable – Assy Control Panel | 1 |
| 18 | * 301949 | Harness – Assy | 1 |
| 19 | * 99557 | Cable – Assy | 1 |
| 20 | * 99720 | Bracket – Mounting | 1 |
| 21 | * 20570 | Screw – Round Head | 4 |
| 22 | * 20641 | Nut – Hex #10 | 4 |
| 23 | 301922 | Harness – Assy Honda Engine | 1 |
| | 301923 | Harness – Assy B&S Engine | 1 |

* - Not Shown

# PEDESTAL MOUNT KIT



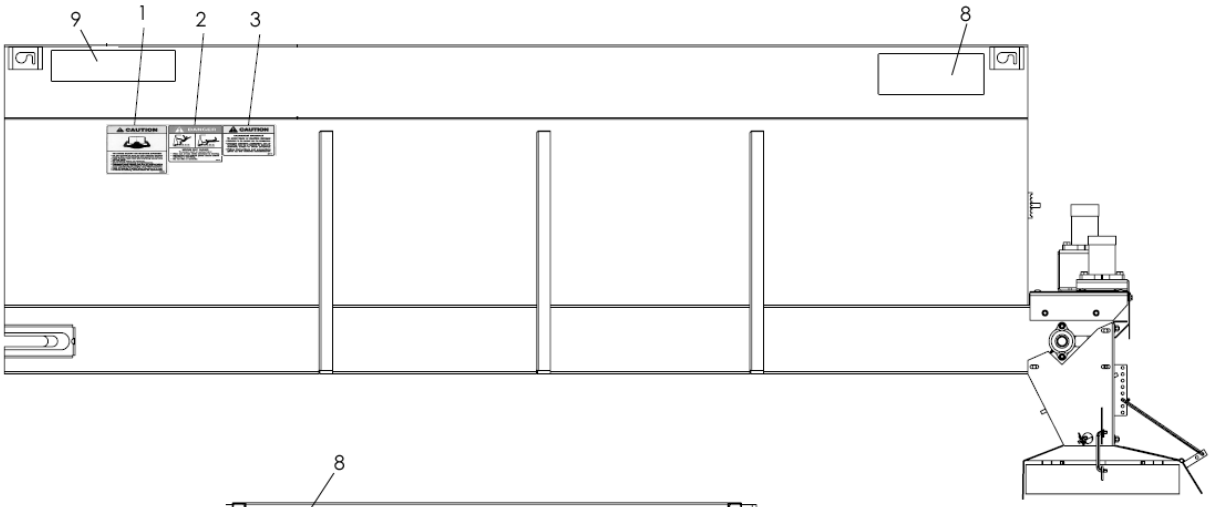

T - TANK
P - PUMP PRESSURE
S - SPINNER
A - AUGER/CONVEYOR

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 20013 | Cap Screw – 1/4 x 3 | 2 |
| 2 | 29752 | Adapter | 3 |
| 3 | 29784 | Adapter | 1 |
| 4 | 36803 | Mount – Valve Wldmt | 1 |
| 5 | 36800 | Tube – Hydraulic | 4 |
| 6 | 29799 | Adapter – Bushing | 4 |
| 7 | 29808 | Adapter | 1 |

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | * 18738 | Light – Warning | 1 |
| 2 | * 79881 | Light – Warning Amber | 1 |

* - Not Shown

NOTE: Install lights and reflective devices to conform to FMVSS-108 and state requirements.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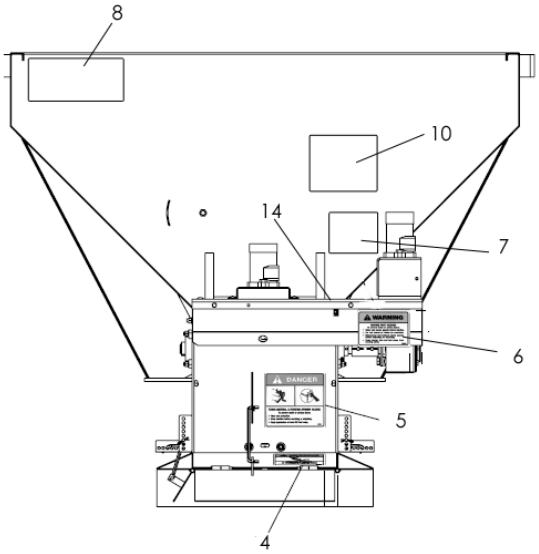
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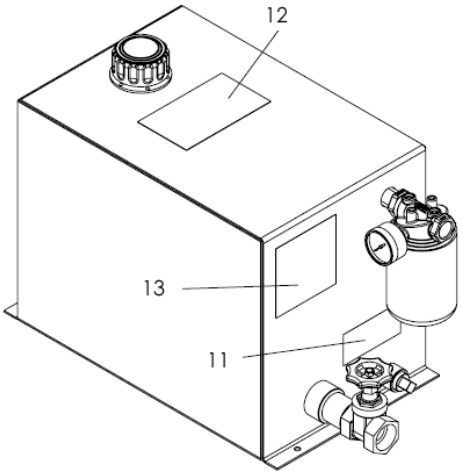
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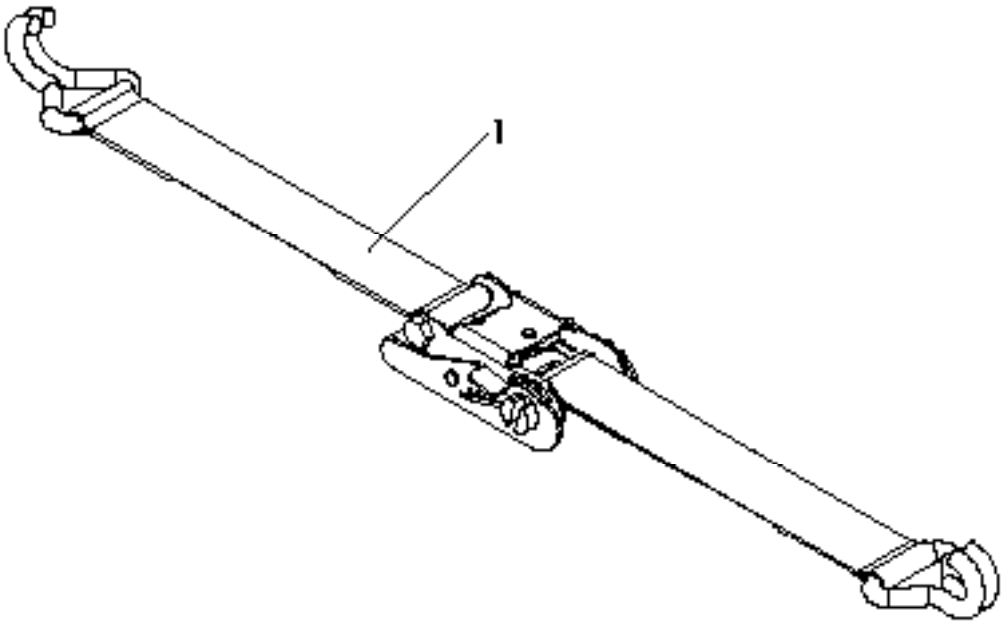
## DECALS CONTINUED

| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 150034 | Decal – Caution Improper Operation | 1 |
| 2 | 364 | Decal – Warning Stay Out of Box | 2 |
| 3 | 321 | Decal – Caution Material to be Spread | 1 |
| 4 | 55630 | Decal – Falling Hazard | 1 |
| 5 | 83649 | Decal – Warning Flying Material | 1 |
| 6 | 55631 | Decal – Warning Guard for Protection | 1 |
| 7 | 363 | Decal – Warning Fire Hazard | 1 |
| 8 | 39870 | Decal – Hi-Way Large | AR |
| 9 | 77857 | Decal – Super P | 2 |
| 10 | 39138 | Decal – Warning High Pressure Fluid | 1 |
| 11 | 8664 | Decal – Caution Keep Valve Open | 1 |
| 12 | 8665 | Decal – Caution Hydraulic Oil Only | 1 |
| 13 | 39378 | Decal – Oil Filter | 1 |
| 14 | 55224 | Decal – Danger Guard Missing | 1 |
| 15 | * 79692 | Decal – Warning Moving Part Hazard (Engine Cover) | 1 |
| 16 | * 42791 | Tag – Important Plug Removal | 1 |
| 17 | *83628 | Decal - Hi-Way Small | AR |

* - Not Shown

# MOUNTING KIT




| ITEM | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 99417 | Strap – Ratchet | 4 |
| 2 | * 301340 | Mounting – Kit Canada Only, Includes Items A-C | |
| A | 84996 | Hardware – Kit Canada Only, Includes: | 1 |
| | 90564 | Link – Clevis Double 5/16 | 8 |
| | 34078 | Bolt – Eye 3/8 x 1-1/4 | 4 |
| | 20644 | Nut – Hex 3/8 | 4 |
| B | 34080 | Load Binder | 4 |
| C | 6167-42 | Chain – 1/4 x 42 | 4 |
| | *301341 | Mounting - Kit, Includes Items A-C | |
| A | 84989 | Hardware - Kit, Includes: | 1 |
| | 31562 | Link - Clevis Double 5/16 | 8 |
| | 20644 | Bolt - Eye 3/8 x 1-1/4 | 4 |
| | 34028 | Nut - Hex 3/8 | 4 |
| B | 34080 | Loan Binder | 4 |
| C | 6167-42 | Chain - 1/4 x 42 | 4 |